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THE  
ENTOMOLOGIST

An Illustrated Journal

OF

GENERAL ENTOMOLOGY.

EDITED BY N. D. RILEY, F.R.E.S., F.Z.S.

WITH THE ASSISTANCE OF

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


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# THE ENTOMOLOGIST.

Vol. LXVI.]

JANUARY, 1933.

[No. 836]

## THE LIFE-HISTORY OF *ACOSMETIA CALIGINOSA*, HB.

By E. A. COCKAYNE AND C. N. HAWKINS.

ALTHOUGH according to Edelsten's note in the *Entomologist* of September, 1931, G. Tate, of Lyndhurst, used to breed *Acosmetia caliginosa* regularly from the larva some thirty years ago before it disappeared from the New Forest, the meagre information in our books of reference is derived from Continental sources. It is one of the few larvae neither described nor figured by Buckler. Barrett (*Brit. Lepidopt.*, 5: 263) gives no figure, and translates Hofmann's description, "Larva much attenuated in front and behind; sap-green with yellow incisions of the segments, and single fine white longitudinal lines. Lives on *Serratula tinctoria* and *Sanguisorba*, resting by day on the stem or underside of the mid-rib of the leaf", and making an unfortunate guess on his own account adds, "Doubtless it feeds up in the spring, but upon this point the Doctor is silent". Spuler (*Raupen der Gross-Schmetterlinge von Europas, Nachtrag*, pl. v, fig. 16) shows the larva in a very uncharacteristic attitude. The colour of the head and prothoracic plate is yellowish brown, not green as in our larvae, and the shape of the prothoracic plate is incorrect. The lines are white, not yellow as in all our larvae.

Lt.-Col. P. A. Cardew was fortunate to find the imago on the mainland of Hampshire for the first time since it disappeared from its old haunts in the New Forest, though it has been taken from time to time in the Isle of Wight, and in a note to the *Entomologist* of August, 1931, remarks on the conflicting statements about the insect and the very incomplete accounts of its early stages. To remedy this he kindly sent ova to Mr. Tonge to photograph, and to Mr. Hawkins to enable us to describe the various instars of the larva and the pupal characters. The eggs of the first female hatched unexpectedly, before we had been able to obtain *Serratula*, on July 2nd and 3rd, and though we gave them leaves of dock, dandelion and knapweed, all died on or before July 5th without feeding. They wandered about restlessly and very actively until they were near death. The larvae from the second female were given leaves of *Serratula coronata*, *S. gmelini*, and *S. quinquefolia*, obtained through the kindness of Mr. W. Hales from the Chelsea Physic Garden, and settled down at once on the underside of leaves of *S. coronata* and ate little round pieces of the parenchyma, but

leaves of the other two species were untouched. Afterwards *S. tinctoria* and *coronata* were usually given together, and the larvae showed no preference for the natural food-plant *tinctoria* over the substitute *coronata*. Only once when some were in the last instar were leaves of all four species given together, and then *tinctoria* and *coronata*, which is similar but rather coarser, were eaten with equal avidity and the others were rejected.

#### DESCRIPTION OF EGG.

Ova laid during the night of June 24th–25th hatched July 2nd and 3rd. Description made on June 29th (C. N. H.): Type, upright. Colour, an extremely pale creamy white, glassy looking and very shiny, with an irregular patch of pale chocolate colour at the top, including the micropylar area, and extending very unevenly a little way down the sides. Since this patch moves it must be due to part of the larva showing through the shell. An irregular band of pale chocolate encircles the egg at about half its height or a little higher. Size: .0375 mm. outside ribs at widest part and approximately the same height. Shape: Looked at from above, roughly circular, but this outline seems rather variable, several ova appearing slightly flattened in one direction so as to have a small difference in the diameter in different directions. Looked at from the side the egg is widest just above the base, echinus-shaped, and the micropylar area is in a depression at the top, apparently caused in part by the fading away of the strong ribs, which run up the sides of the egg. Sculpture: 23 to 25 (? one with 22 and one with 26) strong vertical ribs, of which only 9 or 10 reach the micropyle, the rest fading away at different heights. Between these ribs are finer cross-ribs joining them like a spider's web.

#### DESCRIPTION OF LARVA (E. A. C.).

*First instar.*—From ova laid 8.vii, larvae hatched 15–17.vii. 1931. In length the newly-hatched larva is approximately 2.25 mm., and is very narrow in proportion to its length. It is colourless, semitransparent, and shining, and in some larvae the internal organs are visible as a chocolate-brown line in the last two thoracic and first two abdominal somites. The head is about twice the width of the abdominal somites, the 1st thoracic narrower than the head, the 2nd still narrower, and the 3rd about the same width as the earlier abdominal somites. There is some narrowing at the divisions between the thoracic, and between the 7th and 8th and 8th and 9th abdominal, somites, and great narrowing at the divisions between the other abdominal somites. The larva is

a semilooper, and when at rest clings to the leaf by the three well-developed pairs of prolegs with the rest of the abdomen free in a double curve, so that the anterior part of the abdomen is almost at right angles and the thorax horizontal to the leaf. *Head* colourless, tinged with brown at the sutures and edged with darker brown at the mouth-parts. *Antennae* with black rings at the distal ends of the segments. *Ocelli* black, five arranged in a semicircle and the sixth above the lowest and innermost of the five. *Setae* black, placed on large brown circular areas not very sharply defined at the edges. *Thorax*.—Prothoracic plate very pale brown, edged laterally and posteriorly with dark brown, broad in front, scarcely half as wide posteriorly. Anterior border slightly curved with convexity forwards, posterior border parallel to anterior. Lateral border for the first third running obliquely outwards, then for the remaining two-thirds curving gently inwards to join the posterior border. Along the anterior border of the prothoracic plate are two pairs of long black curved setae pointing forwards, the central pair considerably the longer, and two-thirds of the distance from the anterior border are two more pairs of setae, both short, the inner pointing forwards and the outer forwards and outwards. External to the middle of the prothoracic plate is a seta on the anterior part of an obliquely set dumb-bell-shaped black plate, and external to its postero-lateral angle are two more setae, both very small, the posterior one being the smaller, each on a minute black tubercle, the two tubercles being joined by a narrow black line. On the dorsum of the 2nd thoracic is an anterior pair of very small setae pointing outwards and backwards and two posterior pairs, the inner and smaller pointing outwards and backwards and the outer outwards and forwards. The legs, held forwards, are long, transparent and colourless, with black rings at the distal ends of the segments. On the abdominal somites the long black setae arise from small black tubercles situated on conical elevations,  $\alpha$  directed backwards and inwards,  $\beta$  backwards.

The *spiracles* are very small and circular, white with a black ring, the first and last pairs twice the size of the others. The first two pairs of prolegs are functionless, and only visible as slight projections seen from the lateral aspect, and from the ventral recognizable by the two semicircles of tiny crochets, six in each, occupying an area little larger than that of a setal tubercle; the 3rd pair is long and the 4th still longer, both held almost at right angles to the lateral aspect of the body, tapering rapidly towards the distal end, but each terminating in a large triangular expansion, its base distad, provided with black crochets. The anal prolegs are held parallel to one another, pointing directly backwards, and each has about eight crochets. Under high

magnification the whole of the skin is seen to be covered with innumerable tiny pits. After feeding, the thorax, and still more the abdomen, become larger than the head and coloured green by ingested food.

*Second instar.*—7.vii.1931. Semitransparent creamy white, with chocolate internal organs showing through 2nd and 3rd thoracic and 1st and 2nd abdominal somites as in first instar, but less clearly; head same width as thorax and first abdominal, thence tapering gradually to anal end, which is very narrow. Head pale yellowish-brown with slightly darker brown mouth-parts. Setae short and black on minute black tubercles, each set in a smoky brown area fading away at the edges. Sutures and posterior borders of head smoky. Antennae, basal segment colourless with black distal ring, middle and terminal segments entirely black. Ocelli black. Prothoracic plate creamy-white, much the same shape as in first instar, but with lateral curve smoother and lateral concavity a little less pronounced. Two anterior pairs of curved setae (?  $\alpha$ ,  $\gamma$ ) very long, the outer the longer, set on very small black tubercles, the inner pair pointing forwards and slightly outwards, the outer pair forwards and slightly inwards. Two posterior pairs of setae (?  $\beta$ ,  $\delta$ ) very short, inner pair pointing forwards, outer outwards and slightly backwards. In line with outer anterior seta and just posterior to the prothoracic plate are two setae, the anterior one very long curving forwards and outwards, and the other just behind it pointing outwards. On both 2nd and 3rd thoracic somites is an inner pair of very short setae pointing forwards and an outer rather longer pair pointing outwards and forwards. The divisions between the thoracic somites are not very marked but those between the abdominal somites are deep. Anterior pair of dorsal setae ( $\alpha$ ) shorter than posterior ( $\beta$ ), which are very long. Anterior ones point outwards and forwards, posterior outwards and backwards. All the setae, thoracic and abdominal, are black and on very small black tubercles. First pair of prolegs a little larger than in first instar but still functionless; 2nd pair still larger, and though not used in walking, touch surface of leaf when larva is at rest. Anal plate not recognizable from surrounding skin.

At the end of the second instar the larva, excepting the head but including the prothoracic plate, is pale green with a narrow white spiracular line, and the small circular black-ringed spiracles lie in this line with the exception of the last. There is also a thin white dorsal line and a still narrower white subdorsal line on each side. The setae arise from well-defined circular white areas. The larva is very long and thin, and rests stretched out flat on the under-surface of a leaf with head flat, legs pointing forwards,

and 3rd and 4th pairs of prolegs spread out laterally. The anal pair stretched out and pointing directly backwards. It walks as a semilooper and is very active when disturbed, throwing itself off the leaf and rapidly curling and uncurling. The parenchyma of the underside of the leaf is eaten away in small patches.

*Third instar.*—25.vii. Before feeding 9 mm. long. Pale green, including head and prothoracic plate, a little darker than Scheele's green (Ridgway). Head pale green with black line at junction of lobes. Mouth-parts pale green tinged with brown; mandibles pale brown with very dark brown edges. Ocelli black. Antennae pale green with black ring at distal end of proximal segment. Under high magnification setae on head are seen to arise from small white circular areas, each surrounded by an area of smoky black. Setae black, those on dorsal surface rather short.

The 1st abdominal somite is slightly the widest, and from this the larva tapers a little towards the head, and considerably towards the anal end, which is very narrow. The prothoracic plate occupies the greater part of the dorsum of the prothorax and is larger in proportion than in previous instars. Anterior margin nearly straight; posterior margin also straight, but now more than half the width of anterior. Lateral border with anterior third parallel with long axis of body, then curving towards the midline with marked convexity outwards, followed by a less marked curve with concavity outwards, and then curving sharply in the reverse direction to join the posterior margin. Anterior pairs of setae not so near anterior margin of plate as in previous instars, very long, inner pair curving forwards and downwards following curvature of head, outer pair slightly longer, pointing forwards, outwards and downwards. Posterior pairs of setae, inner very short pointing forwards, outer a little longer pointing outwards. At about the same level as these, but external to the plate, are two very small setae on each side, one directly in front of the other, both curving outwards and forwards. On 2nd thoracic inner pair of dorsal setae very thin and short pointing outwards and backwards; outer pair rather longer, pointing outwards and forwards. Abdominal setae as before, most of them rather long. All setae black on very small black tubercles. Legs long and pale green. After feeding the markings become much more distinct, a narrow white dorsal line faintly visible on prothoracic plate, a narrower subdorsal line each side starting posterior to prothorax, and running just external to  $\beta$  on the abdominal somites until it reaches the 8th, where it bends sharply inwards midway between  $\alpha$  and  $\beta$  as far as the line of  $\beta$  and then outwards again to former position. Spiracular line as in last instar. Setae  $\alpha$  and  $\beta$  each in a white circular area. Anal plate pale green, long and narrow, with two

semicircles of microscopic black dots, convexities pointing forwards, one on each side running across at the level of the most anterior pair of setae.

The larva rests as before, but the 1st as well as the 2nd pair of prolegs now touches surface of leaf, though it still walks as a semilooper. First pair of prolegs smaller than 2nd, though both are much smaller than 3rd and 4th, and are not seen when larva is at rest. Third and 4th still held widely spread and are visible when larva is resting; anal prolegs stretched out behind larva at an angle of about 45° with sides of body. Prolegs pale green with black crochets. The larva always rests on the underside of a leaf and now eats irregular holes right through the leaf and never eats the edges. On July 26th two larvae in this instar were placed on a small living plant of *S. tinctoria* growing in a pot, and covered with coarse net and kept on it until nearly full-grown. They nearly always rested on the underside of a leaf, not necessarily along the mid-rib, but occasionally they chose a stem.

(To be continued)

STRYMON W-ALBUM IN HEREFORDSHIRE.—South in his *Butterflies of the British Isles* states that *Strymon w-album* is recorded in Herefordshire but rarely. I have found it, however, locally abundant in several localities in the woods near Ross-on-Wye in the last few years. In this locality *Polygonia c-album* has not been half as common this year, while *Polyommatus icarus*, *Heodes phlaeas* and *Lycaenopsis argiolus* have become quite uncommon in the last year or two.—F. A. LEEDS; Gordon House, Bromsgrove School, Worcs.

COLIAS CROCEUS IN DEVONSHIRE.—During the last half of August *Colias croceus* was quite common on the cliffs between Salcombe and Prawle Point, and single specimens occurred in the lanes. It was most frequent on some grassy slopes near Gammon Head, where some numbers could be seen whenever the sun shone. *Pyrameis atalanta* was finer and commoner than I have ever seen it during sixty-four years of observation. *P. cardui* was fairly common and *Aglaia urticae* abundant where there were suitable flowers.—G. HANSON SALE; Coxbench, Derby.

DANAIDA PLEXIPPUS IN THE SCILLY ISLES.—There are certainly more than one specimen of the Milkweed Butterfly (American) *Danaida plexippus* here. I saw one in September quite close. My clerk saw two in his garden at the end of August; he knows the butterfly well as he has lived in tropical climes. And now, this is what has made me say something—another of my men had the butterfly in his hat two days ago and it escaped! I hope the butterfly may breed here.—ARTHUR A. DORRIEN SMITH; Tresco Abbey, Isles of Scilly, Cornwall.

A NEW SYRIAN BUTTERFLY (LEPIDOPTERA,  
LYCAENIDAE).

BY CAPTAIN A. F. HEMMING, C.B.E.

IN August, 1910, Major P. P. Graves took a few rather worn specimens of what appeared to be a new race of *Polyommatus icarus* Rott. (1775) at a high elevation in the Lebanon. This insect was apparently not uncommon in 1930, when it was again taken in the Lebanon, on this occasion earlier in the year, and at a rather higher elevation, by Mr. R. E. Ellison. A comparison of the latter's material and that taken by Major Graves (now in the British Museum) with the very long series available of the ordinary Lebanese race (ssp. *lucia* Culot) of *icarus*, shows how marked and constant are the differences which separate *lucia* from the insect discovered by Major Graves. The latter I now name :

***Polyommatus icarus juno* ssp. nov.**

♂ ♀.—The termen is almost straight, instead of being convex, with the result that the fore wing appears much narrower and more pointed.

♂.—*Upperside*: Ground-colour paler and brighter blue and less tinged with violet than in *lucia* and other subspecies; fringes whiter and broader. *Underside*: Ground-colour pale, slaty-grey, without the hard whitish tone usually seen in *lucia*; the greenish metallic scaling at the base of the hind wings is much brighter than in *lucia* and covers a more extensive area, stretching from the base of the wing outwards as far as the discoidal spot and downwards to the anal angle of the wing (in *lucia* this scaling is, at most, confined to a small area at the base of the wing). On the *fore wings* the ante-marginal spots and chevrons (black in colour and well developed in *lucia*) are only faintly indicated in a darker tone of grey, the orange lunules often seen in *lucia* being completely absent; the centres to the submedian spots and the discoidal spot (black in colour, large and conspicuous in *lucia*) are blackish grey, small and inconspicuous; the basal spots (well defined in *lucia*) are also inconspicuous and one or both are not infrequently absent. On the *hind wings* the series of large and brilliant orange submarginal lunules (which are characteristic of *lucia*) are replaced by an inconspicuous row of pale yellowish chevrons. As on the fore wing, the spots (submedian, discoidal and basal), which in *lucia* and other subspecies normally have clearly defined black centres, are in *juno* rendered inconspicuous by those centres being instead a dull blackish grey. The white discoidal spot is not infrequently without any dark centre, and one or all of the basal spots are often absent.

♀.—*Upperside*: Ground-colour darker brown than in *lucia* and without any reddish tone; the series of submarginal lunules (large and bright orange in *lucia* and complete on fore wing as well as on



hind wing) is, in *juno*, small, yellow in colour, inconspicuous, and on the fore wing only partially developed. *Underside* café-au-lait in colour (instead of pale greyish brown as in *lucia*), and of the same tone on fore wings and hind wings (instead of, as in *lucia*, being paler on the fore wing). The submedian, discoidal and basal spots small and inconspicuous as in the ♂ (in *lucia* the black centres of these spots are very large and dark); the submarginal lunules small and pale orange in colour (large and bright orange in *lucia*).

*Average length of forewing*.—♂ 16 mm., ♀ 15 mm. (in *lucia*, ♂ 15 mm., ♀ 14 mm.).

♂ holotype and ♀ allotype, "Lebanon, Sannin, 6.vii.1930, R. E. Ellison", in Hemming Coll. (A. F. Hemming Coll. No. ♂ 32,825, ♀ 32,826). Paratypes ♂ 5, same data as holotype in Hemming Coll. (A. F. Hemming Coll., Nos. 32,820-24): ♂ 3 in British Museum (B.M. Types No. Rh. 407-9), and ♂ 5 in Hemming Coll. (A. F. Hemming Coll. Nos. 32,815-19) labelled "Lebanon, Cedar Mountain, 22-23.vi.1930, R. E. Ellison"; and ♂ 2, ♀ 1 labelled "Cedars of Lebanon, 6-8000 ft., end viii.1910, P. P. Graves" (B.M. Types No. Rh. ♂♂ 410, 411, ♀ 412).

I have examined the genitalia of *juno* and they are inseparable from those of *P. icarus*. The new subspecies can be readily separated from any other subspecies of *icarus* by its more pointed fore wings, its pale, lightly spotted underside, and the marked reduction in the size and brightness of the orange submarginal lunules on the underside. By these characters *juno* differs from *lucia*, the lowland Lebanese race of *icarus*, on lines exactly parallel to those which divide the high and low elevation races of *Polyommatus amandus* Schn. (1792) of the Lebanon which I have named *brenda* and *anthea* respectively (1932, *Entomologist*, 65: 268, 269).

GREASY INSECTS.—I have recently treated some badly affected specimens of Lepidoptera with "Aviation" petrol and found the results surprisingly good. I had previously used benzine for this purpose without very much success, but had heard that "Aviation" spirit was safe and satisfactory in cleaning delicate fabrics, so decided to try it on some moths. I selected some badly greased specimens of *Smerinthus ocellatus*, *Dicranura vinula*, *Hepialus humulus*, and a few others. The moths were pinned on to a weighted piece of cork and plunged into a tin containing about a quart of spirit. They were left in it for about two hours, and every half hour or so they were gently moved, so as to bring them in contact with fresh liquid. After drying in the air and replacing in the cabinet, I found it was almost impossible to distinguish them from good specimens which had not been affected. The important point is to use plenty of spirit; about two insects to a pint seems about right.—G. F. CROWTHER; Bettws Newydd, Usk, Mon.

## A SUMMER IN BULGARIA AFTER BUTTERFLIES.

BY BRIG.-GEN. C. H. C. VAN STRAUBENZEE, C.B., C.B.E.

WHEN I told a friend that I proposed spending the summer in Bulgaria, his comment was, " Oh ! That is the sort of country where one has to carry a gun, isn't it ? "

Others, more prosaic, and foreseeing for me nothing worse than loneliness and the difficulties arising from a complete ignorance of the language of the country, thought I ought to have a companion, and preferably one with a knowledge of Bulgarian.

Unfortunately not one of my friends was able to come with me, and as I felt that a paid companion would not only add too much to the expense, but might, under certain circumstances, be a positive incubus, I decided to rely on such knowledge of French and German as I possessed to see me through and to go alone. Thanks to the kindness of all Bulgarians with whom I came into contact, and the fact that nearly every member of the educated classes speaks French or German, or, very occasionally, even English in addition to his own language, I never had cause to regret my decision. As for the gun, to judge from the frequent mention of motor bandits, burglars and such-like in my daily paper, I am at least as likely to find a use for it in my own country as in those parts of Bulgaria which I visited.

I arrived in Sofia on May 16th, 1932, and put up at the Union Palace Hotel, where the charges were much the same as at an establishment of similar class in London, a very comfortable room on the first floor with hot and cold running water costing me the equivalent of 10s. nightly. In the restaurant meals were *à la carte*, most dishes costing 25 to 35 levas a portion. One thing that struck me was the price of oranges, a bowl of which stood on the buffet labelled 20 levas each. Imagine the feelings of an Englishman at being asked 10d. for an orange ! I was told that what seems to us an excessive price is entirely due to the high tariff on imported articles, and that later I should be able to buy homegrown fruit, especially cherries, strawberries and melons, at very cheap rates, which proved to be the case. Indeed all food is far cheaper in Bulgaria than here.

On the morning following my arrival I visited the Royal Museum and Dr. Buresch, its Director, with whom Major P. Graves had already kindly put me in touch. After giving me much useful information about localities, Dr. Buresch sent me off to the Entomological Station, a separate building a short distance away, where I was shown by Herr Drensky, in charge of the station, the very

interesting collection made by their Majesties King Boris and his father.

The next day was spent in an inspection of the city, of which that fine cathedral, the Alexander Nevsky, is probably the most striking architectural feature.

On the morning of the 19th I left for Sliven, my first objective for collecting, arriving in the evening. Sliven is a small industrial town, neither more nor less prepossessing than similar places in the West Riding of Yorkshire. At the Hotel Zora, where I had been told that I should find the best accommodation available, I had at first, owing to the manager and his staff understanding no language but Bulgarian, some difficulty in explaining my requirements. But eventually, with the help of one of the guests, I was able to get a passable room at the not extravagant rental of 45 levas (about 1s. 10d.) nightly on condition of taking it for a month. Later, when it got hot, I felt I should have been wiser to take a room on the north side of the building, as I had been advised to do. But this one was lighter for setting purposes in the afternoon, so I stuck to it.

For meals, after the first day or two, I went to the Commercial Restaurant, just across the road from the hotel, and apparently the most popular in Sliven. Here most of the clients who spoke French or German, realizing that I was a solitary stranger, hard put to it to express his wants, lost little time in making themselves known to me and offering help. This solved the worst of my linguistic difficulties. My circle of acquaintances expanded daily, and even included three or four who spoke English. (On the strength of being a retired British officer, I was given the run of the Officers' Club—a great privilege, which I much appreciated. There the officers and their families took their meals, within the building in wet and in the garden in fine weather, while an excellent military band provided music on Wednesdays, Saturdays and Sundays. So much for the social aspects of Sliven as they affected me. Now it is time I got to the collecting. This is done in three gorges or small valleys radiating roughly in the form of a broad arrow from the town of Sliven as its point. These gorges were christened by Mr. A. Simmons, who was here in 1929, and to whom I am indebted for all my advance information about Sliven and Kostenetz Bania, as Prison, Mill, and Dry Gorge respectively. At the entrance to the first and southernmost of these stands the Prison, which is about twenty minutes walk from the hotel. The other two gorges may be reached from the Prison, by crossing (either by a log bridge or stepping-stones) the little watercourse which flows past it, and then following the path between some cottages and on through the cultivation beyond them to the Mill Gorge, about twenty minutes' walk.

Unfortunately, the inhabitants of the aforementioned cottages (gipsies I was told) were given to showing their dislike for foreigners generally and me in particular (I have an idea my Ellwood's helmet annoyed them) by shouting "Germani", coupled with evidently opprobrious epithets when I passed. So, if I did not wish to visit the Prison gorge first, I used, to avoid these people, to take the road from the hotel to the Public Gardens (except for the last hundred yards the same as to the railway station), and turn off it to the left up the dry bed of the watercourse just before reaching the entrance to the gardens. This took me direct to the Mill Gorge, and thence, by taking the path up the hill on the left bank, to the *chloridice* ground in the Dry Gorge. The latter is about one and a quarter hours' walk from the hotel.

I never met with any unpleasantness other than the above in Bulgaria, as the case where an elderly worker in a vineyard shouted angrily after me and was evidently denouncing me to his co-workers hardly comes within that category. A Bulgarian friend to whom I related the incident told me that it was not improbably due to the belief of some of the peasants, that the peaceful pursuit of butterfly-hunting merely masks an attempt to disseminate phylloxera among their vines, with a view to their destruction, and that some years ago a collector had had rather a bad time in consequence. So much for the way to reach the three gorges, and now a word as to the possibilities each of them offers to the collector.

The Prison Gorge is a somewhat restricted hunting-ground, as the sides of it are generally too steep or thickly wooded for rapid movement and collecting has to be confined to the bed. About half a mile or less above the Prison the sides of the gorge close in to such an extent as to leave no bed to speak of, and where they again open out higher up the bed is cultivated. Still, for half a mile up from the prison there is plenty to be taken, notably *Lycaena anteros*, *Heodes dispar rutilus*, *Everes alcetas* and *E. decolorata*, all of which are to be found in greater numbers here than elsewhere in Sliven. Judging from the amount of *Colutea arborescens* on the hillside at the upper end of the hunting-ground, here should be the home of *Lycaena iolas* also, but in spite of the fact that other collectors seem to have found it numerous, I only took one during my stay.

The Mill Gorge was only tried once, Mr. Simmons informed me, by him, and with poor results. Owing to this and the fact that it did not look any good to me, I never collected there.

The Dry Gorge is to my mind not only the most prolific but the pleasantest hunting-ground. On the bare hillside nearly at the head of this gorge is the only known place in Sliven where *Pontia chloridice* flies, while all the other species obtainable in Sliven, with

the exception of the four already specially mentioned in connection with the Prison Gorge, may be taken in greater numbers here than in the latter.

At the beginning of June I made an abortive expedition to Burgas, whence I returned after a stay of only two days to Sliven, having failed to find either *Heodes ottomanus* or *Hesperia tessellum* as I had hoped to do. Either I mistook the locality, or these insects had not yet emerged. The latter is not improbable, as, compared with 1929, when Mr. Simmons found *Zerynthia cerisyi* well out on May 20th, the season was later. I took one of this species on May 25th, but did not see it again till June 2nd, when the emergence may be said to have really begun.

On June 18th I left Sliven for Kostenetz Bania, about 70 kilometres from Sofia. A motor car was waiting at the station of Kostenetz, and at a charge of 50 levas for a seat carried me the seven kilometres to the health resort, which lies beyond the village at a height of some 700 or 800 metres—I do not remember exactly—above the sea-level.

Kostenetz Bania is situated at the mouth of a gorge down which rushes a foaming torrent from the slopes of Mt. Belmeken, one of the highest peaks in the Rilo Dag. It consists of a cluster of four or five hotels and restaurants, with many private villas scattered on the hillsides at varying distances around them. There are a few small shops, a barber's, and last but not least, the unassuming bathing establishment almost overhanging the torrent, where in a sort of communal bath, one for men and the other for women, one can, at a cost of 15 levas, or 7d., immerse oneself for as long as one likes in running water at 41.5° C. Whether one wants to be cured of anything or not, these baths are very useful, as there are none at the hotels. I always went between 10 and 12, during which hours the normal heat of the water is tempered by an admixture of cold.

The hotel I stayed at was very clean and comfortable, with a restaurant providing *à la carte* meals in a separate building in the same grounds. Towards the end of my stay of six weeks I usually took my dinner at the "Priroda" restaurant, which had an attractive balcony overhanging the torrent.

The Bulgarian cuisine generally will easily bear comparison with that obtainable at a similar cost in other countries, and at the "Priroda" I found it particularly good. Living at Kostenetz, which is a pleasure resort with a limited season, cost me, all in, about 13s. daily, or 5s. more than at Sliven.

The best collecting-ground is up the gorge towards Mt. Belmeken. Butterflies are to be found in the more open spots all the way up it, but probably the best locality is just below Canton, one and a

half hours' walk from the baths, and marked by a biggish wooden hut on the right and a jet of water flowing from a pipe on the left of the path. Here I took most of my *Colias myrmidone balcanica*, *Coenonympha tiphon rhodopensis* and *Lycaena eroides*. Three or four times I went on beyond this for another hour and a half, getting at the end of my walk *Argynnis graeca balcanica* and *Erebia oeme* and *E. ottomana*. On this last section of the path there are three or four ramifications which offer seductive possibilities to the energetic collector, but I had not the time or inclination to explore them all. Moreover I never penetrated into the belt of low-growing fir trees which girdles Belmeken a little beyond the limit of my walk. The branches of these trees grow to an unusual length close to the ground, and interlacing with their neighbours form a network through which it is next to impossible to penetrate. The risks run, if one loses one's way in such surroundings, are obvious, and I followed the advice given me not to enter the belt without a guide.

My other collecting-ground was Tcherkovisseh, a spur on the left of and overhanging the road to the railway station.

This offers a very extended field of search, the nearest part of which is only some fifteen minutes' walk from the Hotel Renaissance, where I stayed.

On Tcherkovisseh, in the latter half of June, *Parnassius apollo* was flying in large numbers, while the capture of one or two worn *Colias myrmidone balcanica* suggested that a week or two earlier that species might have been profitably looked for there. The two collecting-grounds mentioned provided ample scope for my energies and I did not look beyond them.

(To be continued )

PERONEA HASTIANA, L., IN SKYE.—In August, 1931, my daughter visited the Isle of Skye and collected for me a number of sawfly tips containing larvae. I particularly wanted to see the form of variation in *P. hastiana* in that remote locality. From that point of view the results were not very valuable, since only seven examples were bred. Most of the larvae obtained proved to be a species of sawfly; all of these died in the winter and the species was not determined. The larvae of *Teleia (Telphusa) notatella* were also numerous, and a series was bred; and *Peronea rufana* was represented by one example of var. *apiciana*. All were from *Salix caprea*. The *P. hastiana* forms were as follows: Three obscurely marked var. *autumnana* and single examples of vars. *aquilana*, *subvittana*, *rufifasciana*, and one very beautiful and rare form, which I consider to be a combination of vars. *scoticana* and *albimaculana*. These results indicate that *P. hastiana* from Skye might be expected to yield some very interesting variations if sufficient material for study could be obtained.—WM. MANSBRIDGE; "Monreith," Derby Road, Formby, Liverpool.

## TWO NEW AMERICAN SPECIES OF SIPHONAPTERA.

BY DR. KARL JORDAN, F.R.S.

(With 7 text-figures.)

THE specimens of the two species here described we owe to the generosity of Dr. Carroll Fox, Medical Director of the U.S. Public Health Service, Staten Island, N.Y., to whom we express our thanks for this addition to the N. C. Rothschild Collection. We have retained the specific names suggested by Dr. Carroll Fox *in litt.*

1. *Hectopsylla eskeyi* n. sp. (figs. 1-5).

♂♀. As in *H. stomis* Jord. 1925, frons without an angle above oral angle and tarsal segment V with 4 pairs of plantar bristles; differs from that species, of which only the ♀ is known, especially in the very different pygidium (*cf.* Figs. 4 and 5).

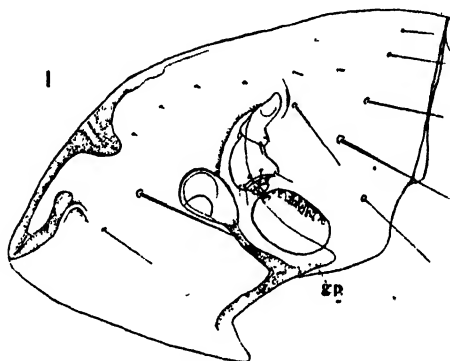


FIG. 1.—Head of *Hectopsylla eskeyi*, ♀.

Genal process (Fig. 1, ♀, *gp.*) shorter than in *H. stomis*; segment I of maxillary palpus longer, being half as long again as II; posterior margin of head with a small lobe in ♀, gradually receding dorsally (absent from ♂), in some of the ♀♀ less distinct than in the one from which the figure is taken. Dorsal projection of metepimerum (Fig. 3, ♀) narrower than in *H. stomis*, much smaller, less curved and less chitinized than in *H. coniger* Jord. & Roths. 1906 and *H. broscus* Jord. & Roths. 1906. Outer dorsal bristles of fore tibia less stout than in *H. stomis*. Pygidium much smaller than in that species, the sensory pits nearer to the base than to the apex (Fig. 4, ♀).

The genitalia of ♂ agree fairly well with those of *H. coniger* (the ♂♂ of *H. stomis* and *H. broscus* not known); but the upper manubrium of clasper (*M.d.*) not curved or only its extreme tip curved anad; large flap *P*<sup>1</sup> trapezoidal, its ventral angle produced downwards, with the tip rounded off, dorsal angle obtuse and strongly rounded; both processes *P*<sup>2</sup> and *P*<sup>3</sup> of the pincers curved upwards; *IX.st.* with 2 or 3 long ventral bristles proximally on horizontal arm and a row of small ones on side from before middle to near apex; 3 small bristles at apical ventral margin.

Ecuador: Lima, on rats, 2 ♂♂ and a series of ♀♀; type ♂ collected by Dr. C. R. Eskey.

Key to the ♀♀ of the species of *Hectopsylla* known to me:

- a. Frons with obtuse angle above oral angle; process of metepimerum strongly curved or absent . . . . . b.
- Frons without angle above oral angle; process of metepimerum slightly curved or not curved . . . . . d.
- b. Metepimerum without process; tarsal segment V in both sexes with more than 6 pairs of plantar bristles

*H. psittaci* Frauent. 1860.

Metepimerum with curved process at dorsal posterior angle; tarsal segment V with 6 or fewer pairs of plantar bristles . . . c.

- c. Tarsal segment V with 3 pairs of plantar bristles (in ♂ with 4 pairs); frontal angle distinct . . . . . *H. coniger* J. & R. 1906.

Tarsal segment V with 5 or 6 pairs of plantar bristles (in ♂ probably 6); frontal angle strongly rounded

*H. broscus* J. & R. 1906.

- d. Sensory pits of pygidium nearer to base than to apex

*H. eskeyi* n. sp.

Sensory pits of pygidium nearer to apex than to base

*H. stomis* Jord. 1925.

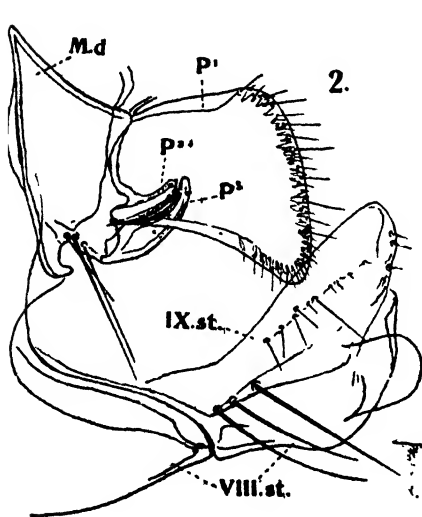


FIG. 2.—Genitalia of *Hectopsylla eskeyi*, ♂.

FIG. 3.—Metepimerum of *H. eskeyi*, ♀.

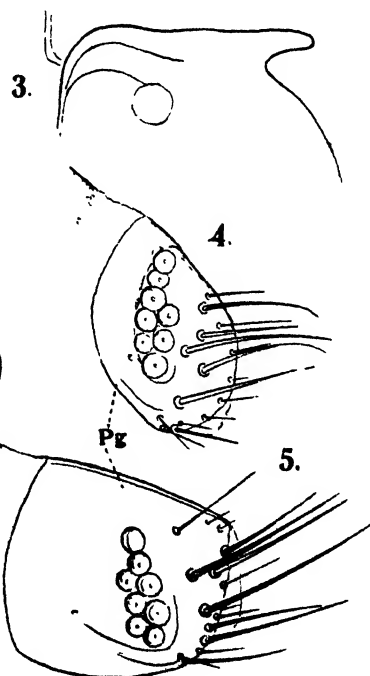


FIG. 4.—Pygidium of *H. eskeyi*, ♀.

FIG. 5.—Pygidium of *H. stomis*, ♀.



2. *Ceratophyllus saundersi* n. sp. (figs. 6, 7).

♂♀. Near *C. bruneri* Baker 1895, but with fewer bristles and the ♂ genitalia markedly different, though of the same type of build. In front of the posterior row of bristles on abdominal tergite III 15 and on VII 10 or 11 bristles (in the pair before me). Bristles on

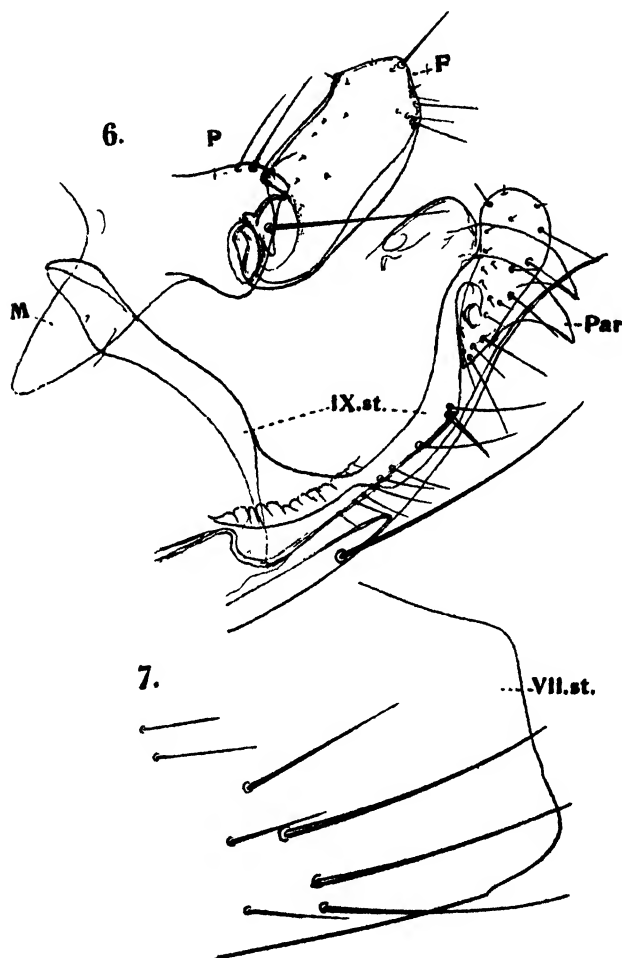


FIG. 6.—Genitalia of *Ceratophyllus saundersi*, ♂.

FIG. 7.—Sternite VII of *C. saundersi*, ♀.

abdominal sternites: in ♂ III 2, 4; IV 2, 6; V 2, 6; VI 1, 7; VII 2, 5; in ♀ III–V 2, 6; VI 1, 7. Modified segments: ♂. On *VIII.t.* from below stigma 13 or 14 large bristles and a few small ones each side. *VIII.st.* narrow, but broader than in *C. bruneri*, on each side with a long apical filament and one long bristle. Manubrium (*M.*) of clasper

elongate-triangular, almost gradually narrowed from base, not curved upwards. Process (*P.*) of clasper apically narrower than in *C. bruneri*, more strongly concave on inner side, the not-thinned posterior apical portion forming a longer and narrower nose. Exopodite (*F.*) shorter and much broader, less than two and one-half times (in *C. bruneri* more than three times) as long as broad. Upper portion of vertical arm of *IX.st.* not much broader than the middle portion, not curved anad, gently rounded on the posterior side; proximal portion of ventral arm long, as in *C. bruneri*, with a row of bristles, the last but one of which is almost spiniform; apical lobe strongly rounded. Hooks of parameres (*Par.*) shorter and broader than in *C. bruneri*. ♀: Shape of *VII.st.* (Fig. 7) as in *C. bruneri*, but there are fewer bristles—8, 8—on the two sides together. On outer surface of *VIII.t.* from the stigma downwards 18 bristles on one side and 21 on the other, inclusive of some small ones; spermatheca as in *C. bruneri*, the tail being much longer than the head, and the head a little broader than long, nearly globular.

Canada · Saskatchewan, on *Citellus richardsoni richardsoni*, one pair; type ♂. Collected by Dr. J. G. Saunders.

## NOTES AND OBSERVATIONS.

IMMIGRATION RECORDS.—The reports below will be followed by others which, owing to pressure upon our available space, it has not been possible to include in the present issue.—ED.

*Records of Immigrant Lepidoptera seen at Hastings (East Hill), with Dates on which Specimens were on the Wing:*

*Pyrameis cardui*.—First appearance in Hastings, August 3rd, 1932 (W. F.). Single specimens 12th, 13th, 17th four rosy fresh, 18th two worn, 19th three, 23rd, September 4th three.

*Pyrameis atalanta*.—May 15th, August 8th seven, 15th, 17th three, 18th four, 23rd, 28th two, September 7th two.

*Colias croceus*.—August 9th three, 12th, 16th two, 24th.

*Pieris brassicae*.—First appearance May 29th, then average.

*Pieris rapae*.—More abundant than usual, but no direct evidence of immigration. In hot spell August at the maximum nineteen summer brood counted feeding on one lavender bush. Few left in September.

*Pieris napi*.—Not common. Seen July 27th and August 17th two.

*Plusia gamma*.—Taken in daylight: June 28th, July 28th two, August 6th, 9th, 10th two, 13th seven, 15th fourteen, 16th two, 18th twenty-one, 19th four, 21st, 24th, 25th, 28th.

*Nomophila noctuella*.—September 6th.

*Pionea ferrugalis*.—August 16th two.

Whenever I obtain migrant species tired or merely fluttering at the flowers they are kept captive until the following morning and then released from a lawn. About half the *P. cardui* and *P. atalanta* so released will dart up at an angle of 45 degrees, flying fast and straight to the north or N.N.W. (true), thus showing that the urge to migrate

is still present, though not observed when captured. Others will merely flutter in the vicinity, and *Plusia gamma* will usually remain where released.

S. G. Sharman, serving on board the East Dudgeon Light Vessel, has supplemented his letter which I quoted before (*Entom.*, 65: 209) with further information, which is so interesting that I make no excuse for quoting it *in extenso* as follows :

"I have not the dates of the previous migrations of Large Whites I have observed. . . . But, as stated before, this migration of Large Whites seems pretty regular, and again this year I noticed it. This occurred on July the 3rd and lasted from 2 p.m. until 5 p.m. The day was calm and warm, although in the morning there was a light wind (force 2) from the S.E., and this again was evident about 4 p.m. There was nothing spectacular in their formation; in looking to the eastwards one could see about six at a time. It is hard to judge the quantity, but you know, Sir, how fast they travel, and as I stated before, with a clear view one could constantly see about six, these continually passed the whole afternoon at the same speed and quantity, although the last hour they eased a bit in numbers and gradually dwindled, until at five o'clock there were none left. They flew about 20 to 40 feet above the sea level, and appeared leisurely and seemingly in no hurry, and flew directly into the W. to W.S.W., presumably in the vicinity of Wells and Blakeney. The width of the migration I have no idea of, but as far as my vision extended I could see the butterflies as I have said, always having about six in view; there was no close formation, just a straggling migration. I saw no other insects with them, and could not catch any specimens, as none settled on board; they did not appear in the least weary or wing-tired and seemed to flap along leisurely.

"I have not been able to record any other migrants this year, except just lately we have had quite a number of Craneflies on board, but whether these were migrating or not I do not know. Just after I noted the Large Whites I noticed quite an extraordinary quantity of small whitish moths on the water [*Stilpnotia salicis*—T. D.]. The weather had been calm and very fine, and at times they floated past on the tide fairly thickly, and although I tried to get some in a bucket, I was unsuccessful. I suppose these had been migrating and were the weaklings which were drowned. They appeared to be silvery white, all about the same size 1 in.—1½ in. . . . I have seen a few dragonflies lately, and yesterday caught one; it was quite exhausted and let me catch it quite easily, and am forwarding it in this letter [specimen sent—*Aeschna mixta*], as this is all I have to send in. . . . The weather on the 30th Aug. was: Wind S.E., force 4, cloudy with passing rain; later the wind veered S.W. I caught the dragonfly about noon. I also saw a large moth on the same day, but was unable to catch it; this was early morning about 5 a.m., wind S.E., cloudy. I am not sure of the species; it was a large one, one of the Hawk moths, the wings a silvery grey with darker markings and a long body with pink bands as far as I could see [*Herse convolvuli*—T. D.]. . . . would be glad if you could let me know if these migrations

were seen by anybody else."—T. DANNREUTHER, Capt. R.N.; Windycroft, Hastings.

IMMIGRANT LEPIDOPTERA.—S.E. Union of Scientific Societies' Immigration Scheme.—The following is a summary of records received to date since my last report (*Entom.*, 65 : 209) :

*Colias croceus* Fourc.—16.v.32; 28.viii.32; 31.viii.32, Probus, Cornwall (*C. Nicholson*); 1.viii.32, Rhinefield, New Forest, one ♂ (*Dr. F. H. Haines*); 4.viii.32, Hengistbury Head, Dorset, one ♀ (*E. R. Goffe*); 17.viii.32, Oakhanger, near Borden, Hants, one (*R. E. Windsor*); 18.viii.32, Farley Mount, Hants, a dozen or so, apparently all ♂♂ (*E. R. Goffe*); 25.viii.32, Fareham, Hants, one ♀ (*A. H. Sperring*); 25.viii.32, near Petersfield, Hants, fairly common, all specimens taken were ♂♂ (*A. H. Sperring*); 25.viii.32, Oakhanger, near Borden, Hants, one (*R. E. Windsor*); 29.viii.32, Farley Mount, Hants, five ♂♂ (*J. A. Garner*); 1-31.viii.32, Swanage, Dorset, one or two daily (*P. A. Buxton*); August, 1932, Carlyon Bay, Cornwall, a few (*J. Birkett*); August, 1932, Littlehampton, Sussex, one or two every suitable day, most seen in one morning five (*Major H. C. Jeddere-Fisher*); 9.ix.32, Botley, Hants, one ♂ (*J. A. Garner*); 3-24.ix.32, Budleigh Salterton, Devon, about twenty (*H. W. Wilson*); 8.xi.32, Littlehampton, Sussex, one var. *helice* Hb. (*Major Jeddere-Fisher*).

*Pyrameis atalanta* L.—1-31.viii.32, Swanage, Dorset, small numbers (*P. A. Buxton*); 16.viii.32, Oakhanger, near Borden, Hants, three; 24 and 25.viii.32, two each day (*R. E. Windsor*); 25.viii.32, Fareham, Hants, three (*A. H. Sperring*); 27.viii.32, three, and 28.viii.32, one, Oakhanger, near Borden, Hants (*R. E. Windsor*); 3-24.ix.32, Budleigh Salterton, Devon, scores (*H. W. Wilson*); 5.ix.23, Probus, Cornwall, common since mid-August (*C. Nicholson*); 16.ix.32, Budleigh Salterton, Devon, about twelve (*H. W. Wilson*); between 19.viii and 12.ix.32, Botley, Hants, in numbers (*J. A. Garner*); 12-16.ix.32, Milton Park, Portsmouth, a few (*A. H. Sperring*).

*P. cardui* L.—12.viii.32, Carlyon Bay, Cornwall, about 100 (*J. Birkett*); 16.viii.32, near Lancaster, one seen (*A. H. Sperring*); 20.viii.32, Oakhanger, Hants, one ♀ (*R. E. Windsor*); 1-31.viii.32, Swanage, Dorset, from one to three specimens most days (*P. A. Buxton*); August, 1932, Littlehampton, Sussex, a few (*Major Jeddere-Fisher*); August, 1932 (last fortnight), one or two (*C. Nicholson*); 4.ix.32, Botley, two ♂♂ (*J. A. Garner*); 3-24.ix.32, Budleigh Salterton, Devon, about twenty (*H. W. Wilson*).

*Acherontia atropos* L.—c. 18.ix.32, Southampton, one taken in the town (*teste J. Park*).

*Plusia gamma* L.—14.vii.32, Hayling Island, Hants, one (*A. H. Sperring*); 24.vii.32, Botley, Hants, in numbers (*J. A. Garner*); 13.viii.32, near Basingstoke, Hants, fairly common (*A. H. Sperring*); 28.viii.32, Portsdown, Hants, two (*A. H. Sperring*); 1-31.viii.32, abundant throughout August (*P. A. Buxton*); August, 1932, Littlehampton, Sussex, as numerous as usual, ten on a

good-sized lavender bush, on valerian the same (*Major Jeddere-Fisher*); August, 1932, Probus, Cornwall, only a few seen (*C. Nicholson*).

*Nomophila noctuella* Schiff.—26.viii.32, Southampton, a few in the town (*W. Fassnidge*); 28.viii.32, Probus, Cornwall, one at light (*C. Nicholson*); 1-31.viii.32, Studland Heath, Dorset, a few all through August (*P. A. Buxton*).

*Plutella maculipennis* Curt.—1-31.viii.32, Studland Heath, Dorset, a few daily (*P. A. Buxton*).

The following records from lighthouses have been received :

*Start Point Lighthouse, South Devon.*

*Aglais nrticae*, L., and *Pararge aegeria*, L.—31.viii.32, large number seen in the fortnight preceding this date.

*Colias croceus*, L.—16.viii.32, three, wind N.E., light; 30.viii.32, seven or eight ♂♂ (identified from description *in litt.*).

*Pyrameis cardui*, L.—7.viii.32, several, wind S.W. 1; 8.viii.32, two, wind W.S.W. 2; 16.viii.32, dozens, wind N.E. 2; 30.viii.32, several, wind S.W. 3 (*A. W. Godfrey*).

*Round Island Lighthouse, St. Mary's, Isles of Scilly.*

*Pyrameis atalanta*, L.—19.viii.32, two, wind S.E. light.

*P. cardui*, L.—10.vi.32, dozens, wind S.E. light.

*Macroglossa stellatarum*, L.—Three or four, wind S.E. light.

*Plusia gamma*, L.—28.viii.32, several, wind S.W. light.

*Lasiocampa trifolii*, Esp.—28.viii.32, several, ♂♂ and ♀♀, wind S.W. light.

*Euxoa puta*, Hb.—25.viii.32, two or three, wind E.S.E. (*R. Trotter*).

—WM. FASSNIDGE, Recorder, November 21st, 1932.

## RECENT LITERATURE.

*Medical Entomology: A Survey of Insects and Allied Forms which Affect the Health of Man and Animals.* By WILLIAM A. RILEY, Ph.D., Sc.D., University of Minnesota; and OSKAR A. JOHANNSEN, Ph.D., Cornell University. London: McGraw-Hill Publishing Co. Ltd., Aldwych House, W.C. 2, 1932. Pp. xi + 476. Frontispiece and 184 figures in the text. 27s. net.

The possession by two nations of a common language, besides having obvious advantages, has also certain drawbacks, of which the volume before us furnishes examples. Any unsuspecting English student who, reassured by the London address upon the title-page, should open the book at random and light, as well he may, upon phrases such as "in this country", "our fauna", "our most common species" and so forth, would naturally envisage "England's green and pleasant land". He would be wrong. The reference is to the U.S.A., so that, needless to remark, when the authors are dealing with home problems, American and not English pests and their antidotes are kept in the foreground. Again, the sensitive English

eye is apt to be offended by strange and unpleasing spellings like "self-defense", "esophagus", "feces", "center", "meager" and "molt"; while, despite war-time practical experience, the reader on this side of the Atlantic may excusably be unaware that "the body-louse . . . is popularly known as the 'cootie', or the 'grayback'". On the other hand this is a useful *résumé* of present-day knowledge on the subject of "Medical Entomology" in the wider sense, passably accurate apart from occasional slips, some of which are noted below, and fairly provided with text-figures, mostly borrowed or copied from the writings of other authors. The student already referred to will be grateful to the authors for the provision of tables for the determination of orders, families, genera, and in some cases, such as those of *Anopheles* and *Glossina*, species; while all but the most experienced of medical and veterinary entomologists may study with advantage the sections describing the relations of the subjects of the book to disease, as well as those dealing with prevention and control.

Among a certain number of misprints which call for correction are: "*tridecemguttatus*" (p. 27) and "*tredecemguttatus*" (p. 28) for *tredecimguttatus*; "*Trypanasoma*" and "*trypanasome*" (p. 132); "Berraud" for Barraud (p. 198); "*glaucaapis*" for *glaucoapis* (p. 300); "Lagor" for Lagos (p. 301); "*Dichelocera*" for *Dichelacera* (p. 305); and "Bugosa" for Busoga (p. 362).

In the paragraphs on control of horseflies (pp. 301-302) the authors might have mentioned the highly successful expedient, devised by Portschinsky and practised locally in pre-Bolshevik Russia, of lightly oiling the surface of lakes and pools from which these bloodthirsty insects frequently drink. On p. 359 the borrowed figure of *Trypanosoma brucei* is wrongly attributed to Bruce; while it is to be regretted that, a little later (pp. 360, 362), the figures of *Glossina palpalis* and *G. morsitans*, likewise borrowed, and copied from coloured originals with small measure of success, have had their titles transposed, so that the illustration labelled "*Glossina morsitans*" actually represents *G. palpalis*, and *vice versa*. Reference to even a school atlas would have saved the authors from the blunder of assigning the Victoria Nyanza to "South" Africa (p. 361); and the statement on the following page that, since the great epidemic of sleeping-sickness in Uganda at the beginning of the century, "the disease has become much more widespread in equatorial Africa", is not in accordance with fact. What has actually happened is that the interest excited by the Uganda outbreak, and by discoveries in the chemotherapy of a malady once regarded as incurable, has caused the disease to be more widely recognized, which is a different matter altogether. The figure of the larva of the Tumbu-fly (*Cordylobia anthropophaga*, Grünberg) on p. 384, borrowed from Blanchard, is so poor and inaccurate as to be useless and even misleading; the authors apparently are unaware of the existence of a really good illustration of this larva, published in 1908.

The last fifty-three pages of the book are occupied by an appendix describing the method of fumigation by means of hydrocyanic acid

gas for the destruction of household insects, a bibliography and an index ; the latter, however, is little more than a list of names.

E. E. AUSTEN.

*The Life of the Butterfly.* By FRIEDRICH SCHNACK. Translated by WINIFRED KATZIN. London : George Allen & Unwin, Ltd. 8vo. Pp. 278. 7s. 6d.

The thirty-five chapters of this entertaining and highly imaginative little book are devoted each to a separate species of butterfly or moth. "Of what dim intimations are they the luminous word ? It may be they have brought us down the colours of the Paradise we lost, perhaps that was the earth from which they drew their roots, as the gates fell to which shut us out for ever . . . an angel sent a host of butterflies to follow us into exile . . . lilies whose gold we bartered for our folly's dress . . . abandoned speedwell . . . the clover of good omen gambled away . . . timeless sunflowers." This, extracted from the dedication, is a fair sample of the author's gently wandering fancy. But there is not a little to be learnt of the ways of butterflies from the careful observations of Herr Friedrich Schnack, to whom their appeal is both intense and unailing ; yet unless the reader is willing to follow him in kindred vein through his flower-spangled German meadows, his dark and ominous Jura and the scorching sands of the Sahara, dreaming of tales of Araby, finding in his butterflies the reincarnate heroines of Greek mythology, and Elysium in a mud-puddle surrounded by Purple Emperors, then he had better not read him. But there are Leander of the butterfly house, whose influence on the author is so great—a man able to produce gynandromorphs experimentally, and the glazier who spends furtive evenings painting fantastic butterflies for his own delectation ; these provide themes of more mundane origin, to run through the book and furnish mounting stones to those higher realms of fanciful imagery where the author delights to let his mind wander unfettered. Yet the book is wholly delightful, and has the added merit of being both informative and accurate. The author is not to blame that some of his sprites are unrecognizable to the English reader under the names chosen for them by the translator, who, however, may be readily forgiven when there is set in the balance the charming performance of her main duties.—N. D. R.

## SOCIETIES.

ENTOMOLOGICAL SOCIETY OF LONDON.—*Wednesday, October 19th, 1932.*—Mr. R. W. Lloyd, Vice-President, in the Chair.—*Election of Fellow.*—The following was elected a Fellow of the Society : George H. Parry, Chief Librarian, Liverpool Public Libraries.—*Exhibits.*—Dr. L. G. Higgins exhibited a copy of Scopoli's *Entomologia Carniolica*, together with the extremely rare forty-three plates, this being only the second known copy. Mr. O. W. Richards exhibited and made remarks on (1) the prey of *Orthetrum coerulescens*, F., (2) mimicry of Aculeates by an Aegeriid and by Syrphid flies in the South of France,

and (3) a Meloid parasite of *Megachile*. Prof. E. B. Poulton, F.R.S., exhibited and made remarks on (1) attacks by birds on Danaine butterflies observed by Miss Cheesman, Mr. H. G. Champion and Mr. P. L. Guppy; (2) further evidence of nesting associations between birds and wasps in British Guiana by Major R. W. G. Hingston and E. André; (3) Myrmeleonid imagines as predacious insects at 2000 ft. above sea-level by Mr. H. G. Champion, Dehra Dun, U.P., India; (4) a brass model of *Rhynchophorus phoenicis*, "the Palm Weevil", used as a weight in weighing gold, from Ashanti, Abompusu, Capt. R. P. Wild; (5) *Pyrausta cardui* flying at midnight between Madeira and Bathurst on September 28th, 1932, observed by Mr. Donald Kingon; and (6) a Mason Wasp with orthopterous prey and (7) the "Baonga"—the non-aggressive driver ant *Anomma titans*, Sants., var. *vinalli*, Sants., at Bongandanga, Belgian Congo, by Miss Vinall. Mr. L. W. Newman exhibited some fraudulent specimens of alleged gynandromorph British Lepidoptera, and warned possible purchasers against such specimens. Dr. G. D. Hale Carpenter exhibited a Hesperiid butterfly and a moth apparently mimicking it taken August 1st, 1910, near Entebbe by Major C. A. Wiggins, C.M.G. The Rev. A. Miles Moss exhibited some butterflies from the Amazons, and made remarks upon the method adopted by collectors of attracting them to coloured rags, as well as some *Hesperiidae* and their early stages from South America.—S. A. NEAVE, *Hon. Sec.*

THE SOUTH LONDON ENTOMOLOGICAL SOCIETY.—*July 28th.*—Mr. T. H. L. Grosvenor, F.E.S., President, in the Chair.—Mr. Jacobs exhibited his captures at the two recent field-meetings, Forest Row and Eynesford; Mr. Windham, ova of *Zeuzera pyrina* from Wimbledon; Mr. Ennis, larvae of *Sphinx ligustri* from a wayfaring tree; Mr. Howarth, larvae of *Callophrys rubi* from dogwood on Box Hill; Mr. Syms, the northern dragonfly *Somatochlora metallica* taken in a Surrey locality; Dr. Bull, a bred series of *Boarmia roboraria* mostly of a dark grey tone from Bickley, Kent, also larvae of *Cepphis advenaria* from the New Forest. Mr. R. Adkin exhibited a dark form of *Boarmia gemmaria* from Eastbourne, with other forms for comparison, also *Agrotis corticea* taken at light in the house; Mr. C. N. Hawkins, *Palimpsestis or*, with the outer marginal area of the forewings whitish and the submarginal row of spots missing except one near the apex, the rest of wing darker than usual, also a melanic *Thera obeliscata* bred from pine, *Eupithecia arceuthata* from Surrey juniper larvae, with larvae of *Eriogaster lanestris* from Essex and of *Pseudopanthera macularia* from Boxhill. Mr. Downes gave an account of the life-history of a brood of *Selenia tetralunaria* from Ascot and exhibited a late larva of the brood, also ova of *Aventia flexula* from Boxhill. Dr. Cockayne exhibited a gall of the larva of *Synanthedon flaviventris* in a willow stem, and said those feeding overwinter in spring were mostly parasitized; Mr. Bunnett, larvae of *Notodonta ziczac*, and of the Sawfly of the hawthorn with cocoon and imagines. Seasonal notes and suggestions were communicated.

*August 11th.*—The President in the Chair.—The President exhibited a long series of bred *Zygaena filipendulae* and explained

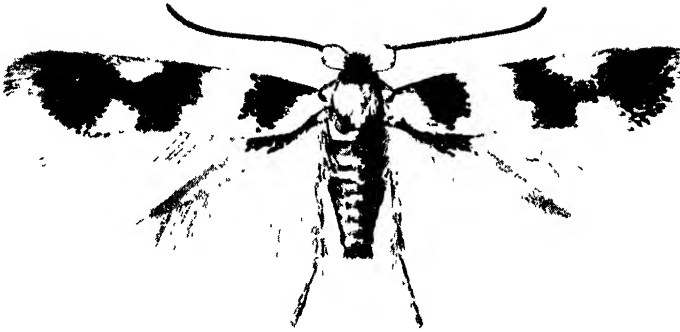


further experiments with this species; Mr. Eagles, pupa of *Gonepteryx rhamni*, and larvae of *Erastria fasciana* from ova feeding on brome grass, *Bromus sterilis*; Mr. Blair, galls of *Agromyza schineri* on aspen, and read notes on their occurrence and bionomics; Mr. R. Adkin, series of the Tineid *Limnoecia phragmitella*, bred from seed-heads of the bulrush, and read notes on the life-history; Mr. Howarth, larvae of *Sphinx ligustri* from Wimbledon. Notes on the season were communicated.

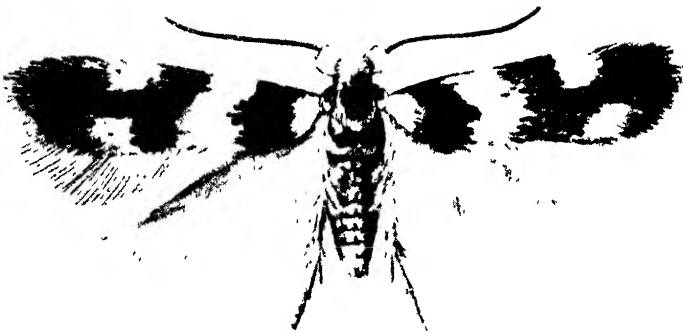
*August 25th.*—Mr. K. G. Blair, Vice-President, in the Chair.—Mr. Bunnnett exhibited two *Hadena nana (dentina)* and two *Tetropium fuscum* (Col.) taken from under one log at Boxhill, and various larvae, including *Cerura bifida* from Bookham; Mr. Wakeley, a series of *Euchlaena parallelaria* from Yorkshire ova, also a specimen of *Myelois neophanes* from Groombridge, taken at the recent field-meeting, a local and scarce species, etc.; Mr. R. Adkin, a series of *Aphomia sociella* and read notes on a case of protective resemblance, also *Argyroplote striana* taken at light in his house at Eastbourne; Mr. Hawkins, a series of *Lygris pyraliata* from Braemar; Mr. Blair, parasites from larvae of *Heliothis peltigera*, probably hyper-parasites on dipterous parasites. Dr. Bull and others reported on the season and their captures.—HY. J. TURNER (*Hon. Editor of Proceedings*).

ENTOMOLOGICAL CLUB.—Two meetings of the Entomological Club were held at Oxford on October 1st and 2nd, on the former date Prof. E. B. Poulton in the Chair, and on the latter, owing to the regrettable illness of Dr. Eltringham, Prof. Poulton again presided.—*Members present.*—Prof. E. B. Poulton, Mr. Robt. Adkin, Mr. H. Donisthorpe, Mr. H. Willoughby-Ellis, Mr. Jas. E. Collin, Mr. W. J. Kaye, Lord Rothschild.—*Visitors present.*—Dr. G. D. Hale Carpenter, Dr. F. A. Dixey, Mr. E. B. Ford, Dr. Karl Jordan, Mr. Colbran J. Wainwright, Comdr. J. J. Walker, Dr. G. R. de Beer, Dr. S. A. Neave, Dr. R. Hanitsch. The members and guests met during the afternoon of October 1st, and were received by Prof. and Mrs. Poulton at the Museum, where tea and light refreshments were dispensed by Mrs. Poulton assisted by friends. The collections and research work in the Hope Department were on view, and the inspection occupied the whole afternoon. A retirement was then made to Jesus College, where accommodation was provided for many of the guests. Dinner was served at Jesus College at 8 o'clock, Prof. E. B. Poulton, F.R.S., presiding. A most entertaining evening was spent. On Sunday morning entomological excursions to various localities were organized which were joined by local entomologists. A return was made to Jesus College at 1 o'clock for luncheon, after which an excursion was made in rather dull and showery weather to Bagley Wood. Owing to weather conditions very little collecting could be done, but the trip was a very enjoyable one and tea was served in the Keeper's Lodge. A return was made to Jesus College at 6 o'clock, where dinner was served at 8 o'clock, and in the absence of Dr. Eltringham Prof. Poulton again took the Chair. The meeting was continued to a very late hour. On Monday morning the Hope Department was again visited and the party dispersed during the day.—H. W. E. (*Hon. Sec.*).





*Nepticula decentella*, H-S. ♂ x 14



*Nepticula sericopeza*, Zell. ♂ x 14

# THE ENTOMOLOGIST.

VOL. LXVI.]

FEBRUARY, 1933.

[No. 837]

## NEPTICULA DECENTELLA, H.-S. (LEP.): A SPECIES NEW TO BRITAIN.

BY ROBERT ADKIN, F.E.S.

(Plate I.)

ON August 5th, 1931, I noticed, resting on the stem of a sycamore tree (*Acer pseudoplatanus*) in my garden a Nepticulid that appeared to be quite unlike anything with which I was acquainted, and was fortunate in capturing it. On removing it from the setting-board I was still unable to identify it, as it did not appear to have any close resemblance to the few Nepticulas that I possessed, nor did I gain any assistance from such English text-books as I was able to consult. I therefore took the specimen to the British Museum, where Mr. H. Stringer very kindly took it in hand, and having satisfied ourselves that it did not agree with any of the species in the British collection. I left it with him for further investigation, with the result that he was ultimately able to identify it with the very good series of *decentella*, H.-S., in the Frey Collection. Subsequently we sent the specimen to Mr. Meyrick, whose reply on returning it, although brief, was very much to the point: "Without any doubt *N. decentella*, H.-S."

I am indebted to Mr. Stringer, not only for the identification of the specimen, but for much of the information contained in the following notes:

Although *N. decentella* somewhat closely resembles *N. sericopeza*, Zell., there are very distinct differences between the two species, of which the following are the more important:

(1) *Decentella* has the hairs on the top of the head dense black (a point stressed by Herrich-Schaffer), whereas those on the head of *sericopeza* are ferruginous-orange.

(2) *Decentella* has the fore wings narrower posteriorly than in *sericopeza*.

(3) *Decentella*, the black patch on the costa near the base does not extend to the dorsum as in *sericopeza*.

(4) *Decentella*, in the male, has a large patch of black scales at the base of the hind wing extending practically across the wing; in *sericopeza* the scales are less dense and confined more or less to the costa. We have not discovered any other Nepticulids having a similar feature.

(5) *Decentella* larvae feed in the seeds of the sycamore, those of *sericopeza* in those of the maple.

Stainton (*E. M. M.*, 1867, 4: 28) gives an account of rearing

*decentella* from pupae sent to him by friends from Frankfort and from Freiberg, and he says: "*Nep. decentella* is very closely allied to *N. sericopeza*, but is a larger and duller coloured insect; my caught specimen of *N. sericopeza* (taken June 28th, 1863, at Lewisham) is far brighter than any of my bred specimens of *N. decentella*". This statement is altogether at variance with our experience; there are, in the Museum, good series of both species, and although at first sight I must confess that *sericopeza* gave the impression of being slightly the larger insect, careful measurements of a dozen or more of each show that they have as nearly as possible the same wing expanse; and as to colour, if there be anything to choose, *decentella* would appear to be rather the yellower.

Frey (*Lep. der Schweiz.*, 1880: 425) considered that *decentella* might be a second generation of *sericopeza*, but from the arrangement of his collection he appears to have discarded the idea, and, indeed, the wide differences between the two insects, as already pointed out, show that such could not be the case.

There is no doubt that there has been a good deal of confusion between these two species. This may, perhaps, be largely accounted for by Herrich-Schaffer's heading to his original description: "1130 *Decentella* m. Sppl. 815—*Sericopeza*, Staint. eher hierher" (*Systematische Bearbeitung der Schmetterlinge von Europa*, 1856, 5: 358); and this probably also accounts for his mentioning England as one of the places where *decentella* had occurred. We have carefully searched all available British records, but have failed to find any mention of *decentella* having occurred in Britain, nor have we found specimens in any of the British collections to which we have access; of *sericopeza* there are several records and specimens.

It is not often that a Nepticulid occurs singly, and there is reason to hope that ere long the larvae of *decentella* may be found in the seeds of some of the sycamores in the neighbourhood. The trees in my garden are so unmercifully cut every winter that they have little chance of producing seed, but there are numbers of other trees nearby, unfortunately often in private gardens, that are not so badly treated, and there is the probability that in some of these the species may be established. Although we have this year failed in our quest, I am not discouraged. Some four years ago I found a solitary specimen of *Pammene regiana* in my garden; it had not previously been recorded for this neighbourhood, and therefore it was thought well to keep a look-out for more, but it was not until last autumn that my friend Mr. Rayward, who is more active than I, discovered its larvae in numbers in the seeds of some sycamore trees growing not very far away.

From Stainton's remarks (*E. M. M.*, 4: 28) there appears to be little doubt that the larvae of *decentella* feed up in the seeds of

the sycamore in the autumn, and do not pupate until the following spring; whether they spend the winter in the seeds or hidden away in some part of the tree appears to be uncertain, but that they do not spin their cocoons in the crevices of the bark of the stems of the trees until the end of April or early in May appears to be pretty clear.

"Hodeslea,"

Eastbourne;

November, 1932.

DANAIDA PLEXIPPUS IN HANTS.—Having heard of the capture of a specimen of *D. plexippus* on September 26th last at New Milton, Hants, I wrote to the captor. In reply Mr. Sturmev has kindly given me the following particulars: "It flew into my garden near where I was working about noonday on September 26th and alighted on a Michaelmas Daisy flower. I approached it, when it flew away, but it soon returned and flew towards a purple veronica which was in full bloom, and on which about a dozen Red Admirals were settled. It alighted among them. I informed my wife who was near; she approached it quietly and took it off the flower. I then killed it by squeezing its thorax. It measured 4½ in. from tip to tip of its wings. The news of our capture brought naturalists to us for investigation, with the result that I unfortunately listened to their overtures and parted with our capture, which I have very much regretted ever since." It is interesting to note that an example of this species was seen on October 1st near Abbotsbury, Dorset, as recorded by Mr. E. H. Smyth (*Entomologist*, 65: 284). These and the record from the Scilly Isles (A. A. Dorrien Smith), published last month (*Entom* 66: 6), bring up the list of British examples seen and captured to about three dozen altogether. One only out of this number occurred in Ireland, and was captured October 20th, 1916, in co. Cork.—F. W. FROHAWK; December, 1932.

PYRAMEIS ATALANTA IN JANUARY.—A specimen of *Pyrameis atalanta* was reported from Holmer Green, Bucks, on January 1st. It was seen flying around the lamps in the church, presumably out of hibernation.—JAMES W. WOOLHOUSE (jun); Hill House, Frances Street, Chesham, Bucks, January 8th, 1933

PYRAMEIS ATALANTA IN JANUARY.—My son writes to me from Plymouth that on January 2nd, at about 10.30 a.m., on a cold, drizzly day, he was standing in the middle of the town waiting for a bus when a Red Admiral, very fresh-looking, appeared from nowhere, flew round him and then went off up the street. Whither away?—E. B. PUREFOY; 87, Oakley Street, Chelsea, S.W. 3.

POLYGONIA C-ALBUM IN SURREY.—With reference to Mr. Frohawk's note in the *Entomologist*, 65: 259, I took a specimen of *Polygonia c-album* on *Buddleia* in my garden here on August 10th last.—J. D. RICHARDS; 6, Milnwood Road, Horsham, West Sussex.

## NOTES ON ARRAN LEPIDOPTERA.

BY GARTH D. HAGGART.

RECOLLECTIONS of an enjoyable trip to Blackwaterfoot on the south-west coast of Arran, during the last fortnight in August of 1931, prompted a revisit to the island again last season. As recorded in the *Entomologist*, **64** : 271, I then found a locality where *Cloantha solidaginis* occurred in profusion, and I also had the pleasure of taking a fine and variable lot of *Hydroecia nictitans* on ragwort bloom at night, together with several other species.

So, on August 2nd, accompanied by Mr. James C. Haggart, we embarked on the Clyde pleasure steamer "King George V", en route for Pirnmill, a picturesque little village situated close to the shore, and about ten miles to the north of Blackwaterfoot. This place derives its name from the fact that nearly a century ago the Paisley cotton-spinners had established a mill here for the manufacture of pirns or reels on which to wind the cotton thread, the ample and handy supply of birch making it profitable to do so. The old mill still remains in a fairly good state of preservation, but is now used for other purposes, the industry itself having become defunct many years ago, when the supply of birch became exhausted. To-day the comparative bareness of the hillsides in the vicinity is evidence of the past attrition, and is in marked contrast to the luxurious sylvan growth on the opposite or eastern side of Arran.

Upon our arrival at Pirnmill in the afternoon, a search was instituted for suitable ragwort ground. In this we were somewhat unsuccessful at first, but eventually we hit on a decent-sized patch about a mile from the village, in the direction of Lochranza. The subsequent searching on three successive nights had disappointing results, only the commonest species turning up, such as *Noctua baja*, *N. brunnea*, *N. xanthographa*, *Triphaena comes*, *T. pronuba*, *T. janthina*, *Apamea secalis* (very variable), *Hydroecia micacea*, *Caradrina quadripunctata*, and some nice forms of *Cidaria russata* (second brood).

On August 4th we climbed the hill behind the village, and at an elevation of from 500 to 600 ft. we discovered a miniature glen, consisting principally of birch, with a sprinkling of sallow and mountain ash; here we beat out in plenty the following species: *Cidaria russata*, *C. immanata*, *C. concinnata* (worn and useless), *C. corylata*, *C. populata*, *C. testata*, *Larentia olivata*, *Anaitis plagata*, *Hypsipetes furcata* (lovely forms), *Venusia cambrica*, and a few *Stilbia anomala*, which were started from the heath.

By the merest chance, whilst crossing a wire fence, we noticed a female *Notodonta dictaeoides* at rest on the wire, and the intensive search which followed resulted in the finding of another female and also a male; on the following day we took one more female on the wire, and on the next a male. We searched several times afterwards, but no more were found: this undoubtedly was a second brood. Ova were obtained, and the resultant larvae had all pupated by the middle of October.

On the afternoon of August 5th we visited the *solidaginis* ground at Blackwaterfoot, but a careful search of the fences proved futile, the species evidently not having yet emerged. On the journey there by motor, we observed a fine belt of ragwort growing on the Imachar shore, and extending for quite half a mile: this we visited several times after dark. By far the commonest species on the bloom was *Agrotis tritici*, which swarmed, the form being very dark and distinctly marked; the larger *aquilina* form also occurred, but sparingly: the first week in August is apparently the right time for this species in Arran, as we took over a hundred specimens and all in perfect condition. *Hydroecia micacea* was also plentiful, and a nice series was obtained, the specimens being fine and large. *Hydroecia nictitans* and *Miana litorea*, which we especially desired, were scarce, eleven of the former and four of the latter being all we could find. These species were evidently only beginning to emerge. *Noctua umbrosa* and *Aporophyla nigra* occurred singly, and all the aforementioned species of Noctuae were plentiful here also. *Polia ch*, the pale typical form, was to be found during the day at rest on posts and walls, but strangely enough none were attracted to the ragwort bloom.

The *solidaginis* ground was again visited on the 13th and 15th, and the species was now well out and quite plentiful, at rest on the fences: the locality is a heathery peat bog, and apparently the species is strongly established here. It has been observed that to induce the females to deposit they require a chip box with a flaw in it, into which they can thrust the ovipositor, and they also require feeding with moistened sugar: one lived for a month in this way, continuing to deposit slowly and intermittently right up to the end.

A large number of ova were distributed to correspondents last year, and it seems from their reports that they managed to bring the larvae to maturity successfully, but completely failed to get them to pupate, the one notable exception being the veteran entomologist Mr. Charles Young, of Rotherham, who managed to rear 25% of his lot. Probably if given a peaty compost, better results might be achieved.

Larvae were not particularly sought for, but the following were



observed: *Notodonta dromedarius* and *N. camelina* on birch, *Dicranura vinula* and *Phalera bucephala* on willow, and *Cosmotriche potatoria* and *Eulype hastata* on ling.

67, Bellwood Street,  
Glasgow.

CHAEROCAMPA CELERIO IN YORKSHIRE.—A fine Silver Striped Hawk Moth, *Chaerocampa celerio*, was taken at rest on a gate-post near Tranby Lodge, Hessle, on October 21st, and added to the collection of Mr. E. Gleadow, Swanland Grange. The last local record for this moth was Brantingham, 1865.—(C. HOLT; 662, Beverley High Road, Hull.

STILPNOTIA SALICIS AS AN IMMIGRANT.—I was interested to see in the January number S. G. Sharman's record of a swarm of small whitish moths (! *Stilpnotia salicis*) floating on the water near the East Dudgeon Light-vessel. Is it not quite as likely that they were *Nygmia phaeorrhoea* (*Porthesia chrysorrhoea*) as *Stilpnotia salicis*? *Phaeorrhoea* has been found occasionally in large numbers on the Yorkshire and Suffolk coasts, where it is usually scarce or absent. Though I suspect that both species come to this country from the Continent from time to time, the description, "small whitish moths", is more applicable to *phaeorrhoea* than to *salicis*.—E. A. COCKAYNE: 116, Westbourne Terrace, W. 2.

LEUCOMA SALICIS, L.—Referring to Dr. Cockayne's query as to whether this species is replenished by immigrants (65. 284), there is a brief but circumstantial account of a large immigration at Harwich in June, 1878, at p. 269 of this Journal for that year.—ROBERT ADKIN; Eastbourne.

LEUCOMA SALICIS IN LONDON.—It is both interesting and satisfactory to learn from Mr. Russell James's article, 65. 249, that this moth still maintains itself in North-East London. In the *Entomologist*, 1882, 15: 271, there is an article by an old friend of mine, Ernest Anderson, on the Lepidoptera of Hackney Marshes, in the course of which he writes, "*Liparis* [*Leucoma*] *salicis* is abundant in all stages, branches of willow being sometimes festooned with the pupae". In 1883, being then resident at Clapton, I paid various visits to Hackney Marshes, and on one of these, in July, I think, I found a row of willows near Temple Mills, about one and a quarter miles south-east of Lea Bridge Station, that were, as Anderson says, literally festooned with the pupae, of which I could easily have gathered several hundreds. In those days Hackney Marshes produced quite a number of good moths, including such species as *Apamea unanimitis*, *A. ophiogramma*, *Arctia urticae*, *Lasiocampa quercifolia*, etc., and many local micros. The late J. A. Clark was a frequent visitor there, and so was William Machin, certainly one of the best micro-lepidopterists of his day, and many others.—W. G. SHELDON.

## A SUMMER IN BULGARIA AFTER BUTTERFLIES.

By BRIG.-GEN. C. H. C. VAN STRAUBENZEE, C.B., C.B.E.

(Concluded from p. 13.)

On July 31st, after six thoroughly enjoyable weeks at Kostenetz Bania, I left there by car accompanied by an English friend and his wife, who had very kindly consented to help me settle into my new quarters at Chamkurya. This is a summer resort of the Sofia aristocracy, and is situated 70 kilometres from that city, among beautiful pine-woods at the foot of the Rila Mountains. It is 1214 metres above sea-level, and only 9 kilometres from the ancient town of Samokov. After a drive of about two hours we alighted at the Pension Radenkoff, to which I had been recommended, and here my friend introduced me to a Bulgarian doctor and his wife, who spoke French and English respectively. They invited me to take my meals at their table and were kindness itself, making me feel thoroughly at home. In fact in a day or two I made the acquaintance of all the inmates of the Pension, who practically without exception spoke either French, German or English. The first two or three days were mostly spent in walks with my Bulgarian friends and I did little serious hunting. There were plenty of insects flying in the open spaces, but mostly species that I had already taken and was not interested in. *Erebia euryale* and *E. ligea* and *Heodes virgaureae* were the most in evidence, while a few fresh *Apatura iris* and two or three worn *Lycaena alcon* were to be seen in the neighbourhood of Varnik. Just as I was beginning to learn my way about, on August 5th a spell of wet weather set in and lasted till the 9th, when, as it showed signs of clearing, I decided on the following day to do the walk to the summit of Musalla, 2932 metres above sea-level and the highest peak in the Balkan Peninsula. I accordingly gave instructions for the guide Georgi the Pomak and his pony to be in readiness at 9 a.m. the following morning. As soon as it became known I was going a companion was forthcoming, and at the appointed hour we set off for the chlet at 2430 metres, where one spends the night. Here we arrived about 1 p.m., having taken it very easily, and were joined later in the afternoon by a party of six or seven of both sexes, with whom we soon fraternised. After a hot dinner provided by the caretaker, we all trooped off at an early hour to the dormitory—a large room with, I think, ten beds, for each of which a charge of 50 levas is made. We were aroused at a little before five next morning, and covered the remaining 500 metres ascent to the summit in about one and half hours. There was a wonderful view over the surrounding peaks, but it was bitterly cold, and at this early hour of the morning no butterflies

were on the move. Later in the day *Erebia lappona* and *E. rhodopensis* would doubtless have been flying, as Herr Drensky, who was spending his holiday at Chamkurya, had already very kindly given me specimens of those taken on the summit a week earlier. After snapshots of the party had been taken, we started on the return journey to the chalet. Within a quarter of a mile of this and at practically the same level, I found *Erebia melas* (nearly fresh) and *E. rhodopensis* (mostly rather worn) flying up and down the bank along which the path ran, and by noon had taken from 15 to 20 of each of these species. It was now time for lunch, to which my companion had for some time been urging me by voice and signal to return, and this hurriedly eaten, we all started off on the way back to Chamkurya, this time *viâ* Sari Gyol and Sednyakovo—a less direct route than that by which we had come. About an hour later I again fell in with *Erebia melas* in some numbers, and it is probable that this species is not uncommon at various places on the mountain. We got home about 6 p.m., tired, but thoroughly pleased with our excursion, and this was virtually the end of my season's collecting, as on the 15th I left by car for Sofia. Thence, after a thoroughly enjoyable and all too brief stay, the pleasures of which were quite unconnected with the pursuit of butterflies, I left in the Simplon Orient Express of the 18th for home.

Below is appended a list of species taken with localities.

S. = Sliven; K. = Kostenetz Bania; C. = Chamkurya, M. = Mt. Musalla.

*Papilio machaon* Linn.—S. and K., rare.

*P. podalirius* Linn.—S. and K., common.

*Zerynthia cerisyi* God.—S., common. One female taken on May 25th and no more seen till June 2nd, when emergence began.

*Z. polyxena* Schiff.—S.; a few worn flying on my arrival.

*Parnassius apollo* Linn.—K., common, especially at Tcherkovisseh.

*P. mnemosyne* Linn.—K., not rare a mile or so up the gorge.

*Aporia crataegi* Linn.—Very common everywhere.

*Pieris brassicae* Linn.—S. and K., not common.

*P. rapae* Linn.—S. and K.

*P. manni* Mayer.—S. and K.

*P. napi* Linn.—K.

*Pontia daplidice* Linn.—Everywhere, but not common.

*P. chloridice* Hb.—Only found in one spot in the Dry Gorge at S., but there fairly numerous.

*Euchloë crameri* Butl.—S., not common.

*E. cardamines* Linn.—S. and K., common.

*Gonepteryx rhamni* Linn.—K., common.

*Colias hyale* Linn.—S. and K., not common.

*C. croceus* Fourc.—S., K. and C., not common.

*C. myrmidone balcanica* Rebel, and ♀-form *rebeli* Schaw.—K., from about a mile below to half a mile above Canton from June 27th on. Also one or two worn at Tcherkovisseh.

*Leptidea sinapis* Linn.—K.

*L. duponcheli* Stgr.—S.

*Erebia epiphron* Kn.—M.; two worn specimens only.

*E. medusa* Schiff.—K., latter half June; not common.

*E. oeme spodia* Stgr.—K., a few on July 19th, about half-way up Mt. Belmeken.

*E. melas* Herbst.—M., as already described on August 11th.

*E. rhodopensis* Nieh.—M., as preceding.

*E. pronoe* Esp.—M., a few about a mile below the chalet on August 10th.

*E. aethiops* Esp.—K. and C.

*E. euryale* Esp.—K. and C., very common.

*E. lgea* Linn.—K., very common, and C.

*E. ottomana* H.-S.—K., half-way up Mt. Belmeken on July 26th, and M.; observed near the shooting lodge at Sari Gyor on August 11th.

*E. lappona* Esp.—M., not seen by me, but taken by Herr Drensky on the summit about August 2nd.

*Melanargia galathea* Linn.—K. and C., very common.

*M. larissa* Boisd.—S., second week in June.

\**Nytha fagi* Scop. [= *hermione* Linn.].—K., one ♂ quite fresh on July 30th.

*Satyrus circe* Fab.—S., common on path to Dry Gorge second week in June.

*Pararge maera* Linn.—K., very common.

*P. megera* Linn.—S. and K.

*P. aegeria* Linn.—K., not many.

*Maniola lycaon* Rott.—K.

*M. jurtina* Linn.—S., from June 28th: K. and C.

*Aphantopus hyperantus* Linn.—K., one on Tcherkovisseh.

*Coenonympha leander* Esp.—S., common.

*C. iphis* Schiff.—C., one or two worn near Varnik about August 2nd.

*C. arcanius* Linn.—K., common.

*C. pamphilus* Linn.—K. and S.

*C. tiphon rhodopensis* Elwes.—K., near Canton, and especially common about an hour's walk higher, on the left-hand path just beyond where it forks.

*Apatura iris* Linn.—K. and C.

\* The identity of this specimen has been checked by an examination of the genitalia and of the Jullien organ.—A. F. H.

- Limenitis populi* Linn.—K., common in the gorge up to Canton.  
*L. camilla* Linn.—K., rare.  
*Neptis lucilla* Schiff.—K., fairly numerous in the first mile of the gorge.  
*Pyrameis atalanta* Linn.—K.  
*P. cardui* Linn.—S. and K.  
*Aglais urticae* Linn.—K., not common.  
*Vanessa polychloros* Linn.—S., very common ; K., less common.  
*V. xanthomelas* Esp.—S., one on June 5th, and K., one on July 8th.  
*V. io* Linn.—K.  
*V. antiopa* Linn.—K., 7 or 8 seen in latter half of July, but only two taken.  
*Polygonia c-album* Linn.—S. and K., common.  
*Melitaea cinxia* Linn.—S. and K., common.  
*M. phoebe* Schiff.—S. and K., common.  
*M. trivia* Schiff.—S., from June 2nd, and K., common.  
*M. didyma* Esp.—As preceding.  
*M. athalia* Rott.—S., from June 14th, and K., very common.  
*Argynnis selene* Schiff.—K.  
*A. euphrosyne* Linn.—K.  
*A. graeca balcanica* Rebel.—K., half-way up Mt. Belmeken.  
*A. daphne* Schiff.—K., not common.  
*A. lathonia* Linn.—S. and K., common.  
*A. aglaia* Linn.—K., fairly common.  
*A. niobe* Linn. form *eris* Meig. S. and K., very common.  
*A. cydippe* Linn.—K., common. The two or three that I took were form *cleodora* Ochs.  
*A. paphia* Linn.—K., common.  
*A. pandora* Schiff.—K. and S.  
*Libythea celtis* Laich.—K.; two or three seen and one taken on June 22nd about a mile up the gorge.  
*Strymon ulicis* Esp.—S., from June 9th, and K.  
*S. acaciae* Fab.—As preceding.  
*S. spini* Schiff.—S., from June 9th.  
*Heodes virgaureae* Linn.—K. and C., common.  
*H. thersamon* Esp.—S.; one female only on May 20th.  
*H. dispar rutilus* Wern.—S., taken in both Prison and Dry Gorges, but by no means common.  
*H. hippothoë* Linn.—K., not common.  
*H. alciphron* Rott.—S. and K., males very common.  
*H. dorilis* Hufn.—S. and K.  
*H. phlaeas* Linn.—S. and K., rare.  
*Everes alcetas* Hfsg. and *E. decolorata* Stgr.—S.  
*Lycaena argus* Linn (= *aegon* Schiff.).—K.

- L. zephyrus* Friv.—S. and K.  
*L. orion* Pall.—S.  
*L. agestis* Schiff.—S. and K.  
*L. anteros* Frr.—S., common in Dry gorge. K., a few only.  
*L. eroides* Friv.—K., plenty on damp spots on the path below Canton.  
*L. icarus* Rott.—S. and K.  
*L. amandus* Schn.—K., one female and one male on Tcherkovisseh on June 28th and July 8th respectively.  
*L. bellargus* Rott.—S. and K.  
*L. coridon* Poda.—K., two on July 28th and 30th just before leaving here.  
*L. meleager* Esp.—K., on Tcherkovisseh only.  
*L. semiargus* Rott.—S. and K., very common.  
*L. cyllarus* Rott.—S. and K.  
*L. iolas* Ochs.—S., one male only, in the Prison Gorge on June 5th.  
*L. alcon* Schiff.—C., a male and two females rather worn near Varnik on July 3rd and 4th.  
*L. arion* Linn.—K.  
*Lycaenopsis argolus* Linn.—S.  
*Carcharodus alceae* Esp.—S.  
*C. altheae* Hb.—K.  
*C. lavatherae* Esp.—S. and K., from June 29th.  
*Hesperia sulae* Esp.—S. and K., a fine race, fairly common.  
*H. alveus* Hb.—K., common below Canton.  
*H. serratulae* Ramb.—S.  
*H. malvae* Linn.—S. and K.  
*H. orbifer* Hb.—S.  
*Thanaos tages* Linn.—S. and K.  
*Adopaea flava* Brun.—K. and S.  
*Augiades sylvanus* Esp.—K.  
*Carterocephalus palaemon* Pall.—K.: a few here and there in the gorge when I arrived.  
 A total of 116 species, as compared with only 83 taken by me in Greece in almost the same period last year (1931).

NORTHUMBERLAND AND DURHAM REPRESENTATIVES OF THE GENUS *PERIZOMA*.—In Robson's list of the Lepidoptera of Northumberland and Durham the genus *Perizoma* is recorded as being rare in all its forms with us. This statement is very misleading, for several of the species simply swarm in all suitable habitats, the most abundant being *P. unifasciata*, *P. alchemillata* and *P. albulata*. *P. flavofasciata* and *P. affinitata*, although not rare in either county, seem more localized. We have not yet worked specially for the other species.  
 —J. R. JOHNSON and J. W. HESLOP HARRISON.

THE LIFE-HISTORY OF *ACOSMETIA CALIGINOSA*, HB.

BY E. A. COCKAYNE AND C. N. HAWKINS.

(Continued from p. 6.)

*Fourth instar.*—31. vii. Length before feeding, 14 mm. Rather less narrow in proportion to length than in last instar, but still tapering noticeably towards anal end. Colour as in last instar wholly pale green. Head pale green with two lateral dark green lines on each side, the lowest on lateral aspect of lobe running from posterior margin straight forwards to the seta lying just external and posterior to the most posterior of the ocelli, the other running from posterior margin of lobe at first parallel to the first, then in an irregular curve upwards and forwards, to end at the seta immediately internal to the seta mentioned above. Six black ocelli. Setae fairly short, black, situated on a circular white area surrounded by a narrow black ring. Antennae pale green with narrow black ring at distal end of proximal and middle segments. Prothoracic plate much as before, but with lateral margin curving in a sharp convexity from anterior margin, then running with very slight curve in opposite direction obliquely backwards and inwards, and then in a smooth curve with convexity outwards to join the posterior margin. Setae on prothorax as in last instar. Colour before feeding green with visible pattern; dorsal, subdorsal, and spiracular lines all narrow, white, and of equal width. Setae, notably  $\alpha$  and  $\beta$ , on white circular areas. Spiracles oval, white with very narrow black ring, prothoracic above spiracular line, other thoracic and most abdominal ones in upper part of line.

The larva rests on all four anterior pairs of prolegs, the 2nd pair being little smaller than the 3rd and 4th, and the 1st only a little smaller than the 2nd. Anal prolegs stretched out behind as in previous instar. The larva no longer walks as a semi-looper, but as a typical noctua. It still rests straight out on the underside of a leaf, with head so flattened as to show the mouth-parts, and when disturbed throws itself about violently, curling and uncurling. As in all previous instars, it makes no use of a silk thread to attach itself to the leaf or to drop from the leaf. It always eats irregular holes through the middle of the leaf, many of them nearly circular.

*Fifth and final instar.*—4 and 6. viii. Colour "calliste" green (Ridgway), with yellow transverse lines at junctions of somites owing to overlap of skin. Head "light yellow-green" (Ridgway). Ocelli black. Setae small and black, each in a pale yellow circular area. Clypeus or front (Ripley) almost an equilateral triangle in shape. Adfrontal sensorium distinct and nearer upper ( $\alpha$  1) than lower ( $\alpha$  2) seta of adfrontal sclerite, well below level of apex of front. Antennae tinged with pale pink. Labrum opaque porcelain

white. Distal segment of palpi pale pink. Mandibles with very dark brown teeth. Prothoracic plate, including its setae, as in previous instar.

*Description of larva nearly full-fed.*—Length 29 mm. Head held flat on leaf so as to show the mouth-parts. Thorax strongly contracted, wrinkled, and somewhat flattened so that it is both narrower and less deep than the abdomen. Abdomen nearly cylindrical, with very slight narrowing at the divisions between the somites. Ninth abdominal somite very slightly raised, 10th much less in depth, so that the 9th forms a fold that in part overlaps it. Legs tinged with pale pink, held pointing obliquely forwards with a space between each pair and between the 1st pair and the head. First four pairs of prolegs of equal size and not visible from above as in previous instars, green with tip and foot pale pink, and the crochets, numbering 18, 20, 24, and 24 on the 1st, 2nd, 3rd and 4th prolegs respectively, blackish brown. Anal prolegs when larva is at rest stretched out directly backwards and visible from above. Colour green with pink foot and bearing 20 blackish-brown crochets. The pattern consists of a rather narrow, pale yellow dorsal line with narrow edging of dark green; subdorsal line of same width and colour and with narrow edging of dark green. The dorsal line reaches the tip of the anal flap, but the subdorsals curve inwards, and end about two-thirds of the way along the flap. Anal plate rounded, pale green, with a narrow pale yellow border. Spiracular line wider than dorsal, pale yellow with a distinct curve downwards posterior to spiracle on 1st abdominal and a less pronounced one in the same position on the 3rd thoracic. It is continued along the outer aspect of the anal proleg, ending at the foot. There is an extremely narrow subspiracular pale yellow line, beginning just behind the leg on the 3rd thoracic and ending at the base of the anal proleg. On each of the first six abdominal somites it forms a small downward loop nearly encircling a seta, but on later somites runs just below the level of this seta, the remaining two of the three lowest lateral setae lying below it. On abdominal somites 2, 3, 4, 5 and 6 a broader pale yellow stripe begins at anterior end of somite and curves down to base of proleg or corresponding point. On the dorsum of abdominal somites setae  $\alpha$  and  $\beta$  lie in well-defined pale yellow circular areas, and just external and anterior to  $\alpha$  is a smaller circular area without a seta in the situation occupied by X when this is present. The lateral seta situated just above a proleg, or in the corresponding position in a somite with no proleg, lies in a similar yellow area, but in the case of the other lateral setae the yellow areas are absent or indistinct. Spiracles: oval, white with narrow black ring. Prothoracic and 8th abdominal about twice the size of the others.



The 1st thoracic lies above the spiracular line, the 1st, 2nd and 3rd abdominal spiracles in it, the 4th abdominal also in it but near its lower border, the 5th and 6th below it, the 7th in it, and the 8th above it, but with the yellow colour of the line spreading up in front and behind and nearly surrounding it. When emptied of its contents ready for blowing the skin is seen to be "wax yellow" (Ridgway), and the blood is green and the fat whitish-green. The prothoracic gland when everted is very long, transparent, and colourless, and is shaped like an Indian club. Under high magnification the skin is seen to be closely covered with minute pits. For a few hours before it goes into the earth for pupation the green becomes paler, the markings less distinct, and the dorsal vessel is visible as a dark line. In some larvae the dorsal surface of the anterior half of the larva becomes tinged with pink. The first larva was full-fed on August 8th and the last on August 18th, so that the larval period varied from 24 to 32 days, which is very much less than that of most Noctuid larvae.

On August 1st Lt.-Col. Cardew kindly took me to the locality which he discovered. Here over a considerable area in a damp clearing in a wood *Serratula* grew in dense masses, but round the edge of the most favoured ground the plants were sparser, growing in small groups or singly. Wherever there was any *Serratula* it showed signs of having been eaten by larvae of *caliginosa*, which must be very abundant, and few of the plants growing singly had escaped. There were round or oval holes of all sizes in the lower leaves, especially in the young pale green ones, but those springing from the flower-stem seldom showed any signs of having been eaten. Sometimes the edge of a leaf had been eaten, but even in such cases the larva had probably started by eating a hole nearer the middle, for the part eaten away at the edge was often smaller than the central hole. By careful searching a few larvae were found at rest all stretched out at full length on the underside of a leaf, with which their colour matched perfectly. By beating the lower leaves into a net about two dozen were obtained, half in the penultimate and half in the last instar. On two occasions two larvae were beaten from the same plant, but these were in different instars. It is probable that the eggs are laid singly each on a different plant, and that when two larvae are found on the same plant they are the progeny of different females. The number of holes in the leaves also suggests that few plants have harboured more than one larva. One larva was parasitized and the ichneumon made a small dark globular cocoon, which jumped about actively more than six weeks later, the highest measured jump being five-eighths of an inch. A male parasite emerged and was identified by Dr. C. Ferrière as *Callidera* sp. The genus is new to Britain, and according to Mr. K. G.

Blair nothing is known of its biology. Two other larvae, each with a black mark on it indicating the presence of a dipterous parasite, went down into the earth. Two tachinids emerged in November, and Mr. C. J. Wainwright has kindly identified them as males of *Pales pavidus*, Mg., and says the species is a general feeder in larvae of Lepidoptera, chiefly in Bombycids and Noctuids with a preference for the former, but has not been recorded in *Acosmetia*.

Imagines of *caliginosa*, 2 ♂♂ and 9 ♀♀, emerged from May 30th to June 15th, the last to appear being one of the males.

If one may judge by the larva of *caliginosa* the genus *Acosmetia* has no obvious affinity with *Athetis* (*Caradrina*), which is the nearest preceding genus represented in this country in Seitz, or with *Petilampis*, which immediately follows it. In *Petilampis minima*, Haw. (*arcuosa*, Haw.), and *palustris*, Hb., are the only species. The larva of the former is in structure very like those of *Miana* and *Tapinostola*, while that of the latter appears to have as its closest relative *Athetis* (*Caradrina*) *morpheus*, Hufn. They are certainly not congeneric, and it would be better to retain *Hydrilla* for *palustris* as other authors do.

(To be continued )

PERONEA FISSURANA, PIERCE AND METCALFE, IN ESSEX.—I do not know if this moth has yet been recorded for Essex, as owing to its comparatively recent differentiation from *P. ferrugana* there are many gaps in its recorded distribution to be filled in. On January 1st, 1933, an unusually mild day for the time of the year, as I was walking past a row of oaks near this town, I saw a small moth flying quite quickly in the sunlight. Eventually it settled, and on capture proved to be a good specimen of the above insect. *P. fissurana* is, of course, already known as a hibernating insect. Mr. L. T. Ford having captured the female in the spring in the Isle of Wight several years ago — H. C. HUGGINS; 875, London Road, Westcliff-on-Sea.

HETEROCERA AT SUGAR IN N.W. HERTS, 1932.—Sugar was very productive from the middle of August to well into October, in marked contrast with 1931, although it was again of little use in June and July. There was invariably a good show of moths no matter what weather prevailed, and some nights insects were remarkably abundant. Between 50 and 60 species were taken in two months, the most interesting for this district being *Agrotis suffusa* (common), *A. saucia* (not uncommon), *Noctua glarea* (very local), *N. rhomboidea* (local), *Agriopsis aprilina* (local and scarce), *Amphipyra pyramidea* (fairly common), *Aporophyla lufulenta* (one or two), *Catocala nupta* (local), *Orrhodia spadicea* (scarce), *Cirrhia citrigo*, *Xanthia cerato*, *X. silago* and *Ochria aurago* (all in small numbers). *Apamea ophiogramma* in July was the best capture at light.—S. B. HODGSON; St. Philip's, Charles Street, Berkhamsted, December 4th, 1932.

## NOTES ON BRITISH ODONATA IN 1931 AND 1932.

BY J. COWLEY, B.A., F.E.S.

THE following records of British Odonata are mainly from the Cambridge district. In 1932 special attention was given in the spring to the dates of emergence and relative abundance of the species, but owing to the author's absence from England during the summer, they are necessarily somewhat incomplete. During the latter part of 1932 the River Great Ouse Catchment Board has been clearing the aquatic vegetation from the dykes and rivers around Cambridge ; it will be interesting to see in what way this may affect the distribution of the local Odonata in 1933.

*Cordulegaster annulatus*, Latr.—Five larvae, all females, from Sticklepath, Okehampton, Devon, were received from G. B. Gooch on May 6th, 1931 : one of these larvae was much smaller than the rest. On June 4th and for three or four days previously the small larva had buried itself in the sandy bottom of the aquarium, and three others had buried themselves in the damp sand above the level of the water ; at 10 p.m. on that day the fifth larva was found on the side of the cage several inches above the water, and the imago had emerged and was fully extended by 8.30 a.m. the next morning. On June 7th, at 10.15 p.m., another larva had left the damp sand and was clinging to the top of the cage ; by 8.30 a.m. the next morning the imago had emerged and was fully extended, while a third larva, also from the damp sand, had transformed, evidently very recently, as the abdomen and wings were not fully developed ; by 11.30 a.m. this specimen was fully developed, but with the body coloration still rather pale. Both the remaining larvae were later found dead, the smaller one having undergone an ecdysis about June 18th. These larvae were from the pond in which a "large black and yellow dragonfly" had been seen ovipositing in 1930 (Lucas, *Entomologist*, 1931, 64 : 175), thus confirming the identity of the species there given as *C. annulatus*. The record of this species from Capel, Surrey (Lucas, *loc. cit.*), is very doubtful, as I had not myself seen *C. annulatus* there, but had only identified it by a description given to me ; on visiting, in 1931, the pond where this species was supposedly seen, I found it to be a very unlikely habitat for *C. annulatus*, but there were numbers of *Aeschna cyanea* present, so that the 1930 record should probably refer to the latter species.

*Brachytron hafniense*, Müll.—1931 : Waterbeach Fen, Cambs., June 5th ; Chesterton, Cambs., June 30th, two specimens seen, one eating a *Sympetrum*, probably *S. sanguineum*. 1932 : R. Bure, Acle, Norfolk, June 1st, 3 exuviae (2♂, 1♀) ; Wicken Fen, June 9th, several mature males and females hawking up and down

Drainers' Dyke, one female ovipositing on floating decayed stems ; June 26th, two specimens hawking over Wicken Lode.

*Aeschna cyanea*, Müll.—1931 : Capel, Surrey, July 11th, exuviae (5♂, 4♀) from margin of small pond, and one recently emerged female ; August 27th, frequent between Cambridge and Grantchester, hawking over River Granta.

*Ae. juncea*, Linn.—1932 : Wicken Fen, September 18th, one worn female.

*Libellula quadrimaculata*, Linn.—1932 : Fowlmere, Cambs., May 25th (G. C. Varley) ; Wicken Fen, June 3rd (Varley) : June 9th, fairly numerous, both teneral and mature, two exuviae from Drainers' Dyke ; R. Bure, Acle, June 1st, 2♂, 3♀, teneral, and 5 exuviae ; Callow Green, Barton Broad, Norfolk, June 18th, a few, nearly mature.

*Sympetrum striolatum*, Charp.—1932 : R. Granta, Grantchester, September 9th, a few ; Wicken Fen, September 18th.

*S. sanguineum*, Müll.—1931 : Chesterton, June 30th, large numbers, teneral.

*Agriion splendens*, Harr.—1931 : R. Granta, Cambridge, about June 7th (Varley) ; R. Cam, Cambridge, June 14th ; R. Granta, Cambridge, June 22nd : Coe Fen, Cambridge, June 29th ; one ♀ exuvia taken from window-frame in Queens' College, about 8 ft. above R. Cam 1932 : Grantchester, R. Granta (a few) and R. Rhee (abundant), June 12th ; R. Rhee, Haslingfield, June 12th, a few.

*Lestes sponsa*, Hans.—1931 : Chesterton, June 30th, fairly numerous, teneral 1932 : Wicken Fen, September 18th, very few, one pair *in cop.*

*Ischnura elegans*, Lind.—1931 : Chesterton, May 31st, teneral ; June 4th, a few, mostly teneral, 3 ♀-f. *rufescens*, Steph. ; Coe Fen, June 4th, Waterbeach Fen, June 5th, a few, R. Granta, Cambridge, June 22nd ; Chesterton, June 30th, a few. 1932 : Fowlmere, May 25th (Varley) ; Chesterton, May 30th, very few, teneral ; May 31st, very few, less teneral ; June 7th, common, very few teneral, ♀-f. *rufescens* fairly frequent : Wicken Fen, June 9th, fairly frequent, majority mature, several ♀-f. *rufescens* and one ♀-f. *infusans-obsolata*, Kill., one ♀ taken eating a specimen of *Coenagrion pulchellum* ; R. Granta, Grantchester, June 12th, a few, several *in cop.* and ovipositing, one ♀-f. *rufescens* ; Callow Green, Barton Broad, June 18th, very common, ♀-f. *rufescens* frequent.

*Coenagrion pulchellum*, Lind.—1931 : Chesterton, May 31st, teneral ; June 4th, fairly frequent, majority teneral ; Waterbeach Fen, June 5th, fairly frequent, one pair *in cop.* : Chesterton, June 30th, a few, one ♀ taken with prey, a small tipuloid. 1932 : Chesterton, May 30th, very common, teneral ; May 31st, very common, less teneral : June 7th, very common, males teneral and

mature, no mature females ; R. Bure, Acle, June 1st, frequent, majority mature ; Hoveton Little Broad, Norfolk, June 1st, very few, mature ; Wicken Fen, June 9th, frequent, majority mature, several pairs *in cop.*, a male taken eating small Ephemeropteran ; a number of Coenagrionid exuviae by Wicken Lode ; R. Granta, Grantchester, June 12th, a few, several *in cop.* and ovipositing ; Callow Green, Barton Broad, June 18th, frequent.

*C. puella*, Linn.—1931 : Chesterton, May 31st, teneral ; Over, Cambs., May 31st ; Chesterton, June 4th, common, majority teneral ; Waterbeach Fen, June 5th, a few ; Chesterton, June 30th, a few. 1932 : Fowlmere, May 25th (Varley) ; Chesterton, May 30th, 31st, very common, teneral, on both days several of either this species or of *C. pulchellum* seen eating Culicids ; Wicken Fen, June 3rd (Varley) ; Chesterton, June 7th, very common, males teneral and mature, no mature females ; Wicken Fen, June 9th, very few ; R. Granta, Grantchester, a few, *in cop.* and ovipositing ; Callow Green, Barton Broad, June 18th, common.

*Pyrrhosoma nymphula*, Sulz.—1931 : Chesterton, May 31st, very few ; June 4th, very few ; Waterbeach Fen, June 5th, a few, one pair *in cop.* 1932 : Chesterton, May 30th, 31st, very few, mature ; Wicken Fen, June 3rd (Varley) ; Chesterton, June 7th, a few ; Wicken Fen, June 9th, fairly frequent ; R. Granta, Grantchester, June 12th, frequent, *in cop.* and ovipositing ; R. Rhee, Grantchester and Haslingfield, June 12th, a few ; Callow Green, Barton Broad, June 18th, very few.

*Enallagma cyathigerum*, Charp. —1931 : Chesterton, June 30th, a few. 1932 : Chesterton, May 30th, very few, teneral ; June 7th, one teneral male ; Wicken Fen, June 9th, fairly frequent, majority teneral, one pair *in cop.* ; June 26th, a pair *in cop.* and ovipositing in Wicken Lode ; September 18th, very few.

EMMELESIA TAENIATA, ETC., AT GRANGE-OVER-SANDS.—While on a visit to Grange from July 9th to 16th, 1932, I captured several specimens of this local moth. They occurred in the woods between Grange and Lindale, in the part of the woods where the brushwood was very dense, with a few bigger trees scattered amongst it. They were all obtained by beating. The best trees and shrubs were yew, furze and holly. They were mostly worn, as indicated by Barrett, but two were fine. They were of the brownish form, somewhat resembling *Coremia unidentaria* (How.), and none having the yellowish border as seen in the Scotch and Irish specimens. When settled on the net they looked like a Pug with depressed wings and raised body. I also came across *Crambus selasellas* (Hb.) on the salt marsh (as well as at Cork), and also *Crambus culmellus* (L.) with a tinge of purple on the costa, which has faded into a dark shade.—W. G. CLUTTEN ; 136, Coal Clough Lane, Burnley, Lancs.

## TRICHOPTERA FROM OXFORD.

BY MARTIN E. MOSELY.

A SMALL collection of Trichoptera, collected mostly in the neighbourhood of Oxford, has recently been brought to the Museum by Canon L. W. Grensted for determination. The collection is noteworthy for the presence of a single example of *Neureclipsis bimaculata* L. from the Thames—so far as I know, the first record of this species from that river. *N. bimaculata* is more particularly a lake species. It occurs abundantly on the big Irish lakes and, abroad, it swarms on Lakes Zurich and Lucerne. Whilst there is no other species of marked interest in the collection, I am glad to have Trichoptera from as many parts of the country as possible. The study of this Order here in Britain has been much neglected since the days of McLachlan, and it is the aim to collect in the British Cabinets in the Museum examples from as many districts as possible, so that definite evidence may be available of the geographical distribution of the Order. All collectors are cordially invited to assist in the realization of this aim.

The following is the list of species :

- Phryganea grandis* L., R. Cherwell, 13.vii.32.  
*Grammotaulius atomarius* F., 26.v.32.  
*Limnophilus rhombicus* L., Botanical Gardens, 9.vii.32.  
*L. fuscicornis* Ramb., 23.v.32.  
*Halesus radiatus* Curt., no date given.  
*Notidobia ciliaris* L., 23.v.32.  
*Brachycentrus subnubilus* Curt., 26.v.32.  
*Molanna angustata* Curt., 7.vii.32.  
*Leptocerus aterrimus* Steph., 11.12.vii.32.  
*L. cinereus* Curt., Botanical Gardens, 9.vii.32.  
*L. dissimilis* Steph., R. Thames, 13.vii.32.  
*Mystacides nigra* L., 7 and 13.vii.32.  
*Hydropsyche pellucidula* Curt., 31.v.32.  
*Neureclipsis bimaculata* L., R. Thames, 7.vii.32.  
*Cyrrus trimaculatus* Curt., R. Thames, 7.vii.32.  
*Lype phaeopa* Steph., 23.v.32.

All the above were taken at Oxford. The following two species were collected in Trecastle, Brecknock, Wales :

- Drusus annulatus* Steph., 31.viii.31.  
*Rhyacophila obliterata* McLach., 31.viii.31.

British Museum  
 (Natural History).

## NOTES AND OBSERVATIONS.

**NEMEOBIUS LUCINA: DOUBLE BROODED.**—I had a number of pupae of this butterfly reared last year on *Polyanthus*. My intention is to release the imagines next spring on their old ground, as the colony has dwindled greatly during the past few years. The pupae were brought indoors at the end of October. Between the beginning of December and the 19th, although the pupae had not been exposed to anything like the ordinary winter temperature, seven emerged. A specimen of *Eu Vanessa antiopa* was seen in my neighbour's garden settled on a clump of Michaelmas daisies for about a couple of hours during one afternoon in late September—probably a "trade" release.—G. B. OLIVER; Hazlemere, High Wycombe, Bucks.

**THANAOS TAGES, SECOND BROOD.**—I think it may be worth recording that I captured a specimen of *Thanaos tages* near Corfe Castle, Dorset, on August 24th. This species, I believe, is normally single-brooded.—F. A. LEEDS; Gordon House, Bromsgrove School, Worcs.

**HETEROCERA IN CO. MAYO.**—Since my last note on moths observed in the Belmullet district, co. Mayo (*Entomologist*, 62: 283), I have met with the following additional species in July: *Euphyra picata*, *Xanthorhoe sociata* (common), *Pelurga comitata*, *Cidaria truncata* and *Perizoma alchemillata* at dusk. *Plusia chrysis*, *P. bracea* and *P. iota* on *Veronica* at dusk, fairly common. *Acronycta megacephala*, *Noctua plecta*, *N. c-nigrum*, *Apamea secalis*, *Miana strigilis*, *Caradrina quadripunctata*, *Triphaena comes*, *Agrotis saucia* and *A. ypsilon* (very worn, ? a migrant) at sugar, none common. Some of the preceding also came to light together with *Abrostola tripartita*, *Dyschorista fissipuncta* and *Anaitis plagiata* (one). A few full-fed larvae and one or two cocoons of *Plusia festucae* were found on rushes, and numerous larvae of *Nyssia zonaria* on dwarf willow, etc., on the sandhills. *Xylophasia monoglypha* was by far the most abundant species at sugar and very variable; every possible shade between normal and black occurred; the latter form was rare. *Triphaena pronuba* came in only small numbers to sugar, but one night I counted well over a hundred on *Veronica*; it was extremely variable, as in England. A fine freshly-emerged, rather pale-coloured ♀ *Smerinthus populi* was taken on the wing at dusk on July 11th. One evening many blackheaded and a few common gulls were hawking over a hillside meadow and snapping up males of *Hepialus humuli* as they hovered over the waving grass-heads. I have never seen this moth so abundant as it was that night. The gulls took heavy toll of them, but I suppose the females suffered less owing to their fast, erratic flight.—S. B. HODGSON; St. Philip's, Charles Street, Berkhamsted, Herts.

**MARGARODES UNIONALIS IN S. DEVON.**—It may interest you to hear that in my light-trap here on October 7th last I took a ♂ *Margarodes unionalis* in bred condition.—E. F. STUDD; Exleigh, Starcross.

NOTES FROM NORTH WALES: LEPIDOPTERA.—In July, 1932, I took a specimen of the local plume, *Alucita spilodactyla*. As I can find no record of its occurrence north of Bristol I should be glad to know if any other collectors have found this insect so far away from its recognized localities. It may also be of interest to record the finding of a flourishing colony of *Plebeius aegon* var. *masseyi* not far from Llandudno. The females are the bluest I have seen from any locality. At Llandudno, on the Great Orme's Head, one evening I was surprised to find a male *Camptogramma bilineata* in cop. with a female *Boarmia gemmaria*.—J. ANTHONY THOMPSON; Tan-y-bryn School, Llandudno.

A CECIDOMYID LARVA PREYING ON PSYLLID NYMPHS.—As my son, who is engaged in research on the Psyllidae, needed a number of nymphs of as many species as possible, I helped him to collect them, and amongst the species I examined was *Aphalara exilis*, which abounds on moorlands and bare banksides on the sorrel, *Rumex acetosella*, in N. Durham. I was surprised to find that in the case of several batches bright crimson larvae of some Cecidomyid fly were present feeding on the nymphs. It is almost certain that this will prove to be a new species, although, on account of the pressure of other work, no attempt has been made as yet to breed it.—J. W. HESLOP HARRISON.

THE LATE MR. E. R. BANKES'S MSS.—Mrs. E. R. Bankes has kindly handed over to me Mr Eustace R. Bankes's manuscript notes relating to work he had in progress at the time he was compelled to cease work, and has also generously offered to bear the cost of publishing them. I have edited and published a few of the papers that were in a fairly advanced condition in the *Transactions of the Entomological Society of the South of England*, and I hope from time to time to be able to complete and publish more there, but, of course, the less advanced a paper is, the longer it takes to polish it for publication. I am, however, nearing completion of one project that Mr. Bankes had very close to his heart, viz. a revised edition of Dale's *Lepidoptera of Dorset*, this work being notoriously inaccurate and out of date. No doubt even after I have completed it there will be lacunae, but with a view to making it as full as possible, I should esteem it a favour if any lepidopterist who has collected in Dorset will furnish me with as complete a list as possible of his captures, giving me precise locality and also, if possible, the geological horizon on which the capture took place. This latter is a desideratum in a county like Dorset, where parishes are often on several widely separate geological formations.—W. PARKINSON CURTIS, F.E.S.; 14, Alington Road, Bournemouth.

## SOCIETIES.

ENTOMOLOGICAL SOCIETY OF LONDON.—*Wednesday, November 2nd, 1932.*—Dr. H. Eltringham, F.R.S., President, in the Chair.—*Election of Fellows.*—The following were elected Fellows of the Society: Richard T. Green, M.D., B.S., D.T.M., The Institute for Medical



Research, Kuala Lumpur, Federated Malay States; David Manson, M.B., Ch.B., L.D.S., Cinnamara Tea Estate, Cinnamara P.O. Upper Assam, India; John David Gillett, 1, Beulah Road, Walthamstow, E. 17; Frederick Carl Almandoz, Dept. of Agriculture, Trinidad, British West Indies; Georges Van Son, The Transvaal Museum, Pretoria, Union of South Africa.—*Exhibits*.—Dr. F. A. Dixey exhibited and made some remarks, illustrated by the epidiascope, on a remarkable Pierine from the Gold Coast. Mr. L. G. Higgins made some further remarks on Scopoli's *Entomologia Carniolica* and discussed the name *Papilio rivularis*, Scopoli. Mr. E. C. Bedwell exhibited and made remarks on a local race of *Tapinotus sellatus*. Mr. H. StJ. K. Donisthorpe exhibited some rare British Coleoptera. Mr. J. E. M. Mellor made some observations on insects from Mount Troodos in Cyprus, July, 1929. Miss L. E. Cheesman exhibited and made remarks on some living specimens of *Cnipsus rachis*, Sauss. (Phasmidae), from New Caledonia. Prof. E. B. Poulton, F.R.S., made remarks illustrated by specimens on (1) resting assemblages of Danaine butterflies in Australia and of Heliconines in Tobago and Jamaica; (2) butterflies with marks caused apparently by bird attacks; (3) why some caterpillars are called "Palmer worms"; (4) a Trinidad wasp observed attacking *Papilio* larvae, by P. L. Guppy; and (5) some fresh examples of *Laternaria servillei*, Spin., from the Amazon, probably Pará, obtained by the Rev. A. Miles Moss. Dr. G. D. Hale (Carpenter) made remarks, illustrated by the epidiascope, on some new evidence of attacks of birds on butterflies. Prof. E. C. Van Dyke, a visitor, gave some account of the work of the Pacific Entomological Survey.

Wednesday, November 16th, 1932.—Sir T. Hudson Beare, Vice-President, in the Chair—*Nominations*.—The Secretary read the following list of Fellows nominated by the Council for the ensuing year: *President*, Prof. E. B. Poulton, D.Sc., M.A., F.R.S.; *Treasurer*, Capt. A. F. Hemming, C.B.E.; *Secretary*, S. A. Neave, M.A., D.Sc. Other members of Council: Prof. W. A. F. Balfour-Browne, F.R.S.E., Sir T. Hudson Beare, B.Sc., F.R.S.E., K. G. Blair, B.Sc., H. StJ. K. Donisthorpe, H. Eltringham, M.A., D.Sc., F.R.S., Brig.-Gen. W. H. Evans, C.S.I., C.I.E., D.S.O., Major R. W. G. Hingston, M.C., K. Jordan, Ph.D., F.R.S., R. W. Lloyd, Miss C. Longfield, Sir Guy A. K. Marshall, C.M.G., D.Sc., F.R.S., O. W. Richards, M.A., N. D. Riley, and V. B. Wigglesworth, M.A., B.Ch., M.D.—*Exhibits*.—Mr. Donisthorpe exhibited and made remarks on some British species of *Scopoeus*. Prof. Poulton, F.R.S., exhibited and made remarks on (1) the contrast between the Geometrid moths *Eupithecia albipunctata*, Haw., and *E. trisignaria*, Herr.-Sch., in the production of dark forms, and discussed their liability to the attacks of parasites in the neighbourhood of Repton, on behalf of Mr. H. C. Hayward, M.A., F.E.S.; and (2) further evidence of attacks by birds on butterflies. Dr. C. B. Williams made some observations on migrations of butterflies, and exhibited specimens in illustration. Prof. Balfour-Browne opened a discussion on "The Law of Priority in Nomenclature".—S. A. NEAVE.  
*Hon. Sec.*

## SOUTH LONDON ENTOMOLOGICAL AND NATURAL HISTORY SOCIETY.

—September 8th, 1932.—The President in the Chair.—Mr. S. J. Turpin, of Willesden, Mr. R. N. Cox, of New Malden, and Mr. A. M. Lowe, of Gunnersbury, were elected members.—Mr. C. N. Hawkins exhibited larvae of *Mitochondria miniata*, and described how they fed on the green *Alga* on oak bark; Dr. Cockayne exhibited a number of species of larvae from Wicken Fen, including *Bankia argentula*, etc., and from Aberdeenshire, including *Venusia cambrica*, etc.; Mr. S. Wakley, larvae and imagines of *Goniocema limoniella*, other larvae from Warley and W. Wickham, and the 19 species of Lepidoptera taken at the Mickleham field-meeting; Mr. Eagles, larvae from Epping, including *Hylophila bicolorana*, etc., from Brentwood, including *Orgyia gonostigma*, etc., and from Ashendon, Oxon; Mr. Storey, larvae of *Agrotis ashworthii* from N. Wales; Mr. J. A. Downes showed a striated aberration of *Polyommatus thetis*, a cocoon of *Plusia festucae* on a sedge leaf, and compared the leaf-bending with that of a spider, and a large number of larvae, including a red-spotted form of *Mimas tiliae*, etc.; Mr. Dolton, larvae from Reading, including *Torocampa pastinum*, *Pheosia tremula* (*dictaea*), *Gastropacha quercifolia*, etc.; Mr. T. H. L. Grosvenor, a representative collection of European *Zygaenidae* which he was presenting to the Society's cabinets; Mr. MacNulty, numerous species of larvae, including *Cilix glaucata*, *Lugdia adustata*, *Psilura monacha*, etc. Reports of recent captures and experiences in the field were made by Messrs. G. de Worms, Ennis, Downes, Hawkins, and Dr. Bull.

September 22nd.—T. H. L. Grosvenor, F.E.S., President, in the Chair.—The President exhibited the results of his breeding experiments with *Zygaena stoicheadis* from the egg, and mentioned that the larvae often hibernate three years. Dr. Cockayne exhibited larvae of *Dasychira fuscilana*, *Acronicta psi* and *A. tridens*, *A. strigosa* (2 forms), and of *Pheosia dictaeoides* from Isle of Arran, Mr. Eagles, larvae of *Bupalus piniaria* and *Agrotis strigula* from Westerham, Mr. R. Adkin showed a series of *Plutella maculipennis* (*cruciferarum*), and read notes on its occurrence in the Eastbourne area, considering it to be possibly an immigrant species; Dr. Bull exhibited a varied series of *Polyommatus thetis* (*bellargus*) from Folkestone, and larvae of *Bourmia roboraria*, *Opisthographis luteolata* and *Plagodes dolabraria*, all from W. Kent: he reported *Colias croceus* at Tenterden on September 15th; Mr. Howarth exhibited larvae from Bookham—*Hadena psi*, *Cosymbia punctaria*, *N. ziczac*, *N. dromedaris*, etc., Mr. S. Wakley, 81 different species of Lepidoptera taken on the occasions of the Field Meetings of the Society in 1932, and an *Aretia caya* taken at Walthamstow with unusually dark fore wings for a captured example; Mr. Ennis, larvae taken at Westerham, including *Eupithecia castigata*, *E. expallidata*, *Dasychira pudibunda*, etc.; Mr. K. G. Blair exhibited some stem-borers of *Eupatorium cannabinum*, spoke of the various parasites met with, and communicated long notes on his investigation. Reports were made of *Manduca atropos* larva, and at sugar of *Ochria aurago* and *Xylina socia*.

October 27th.—The President in the Chair.—Mr. F. G. Griffin, of S. Kensington, was elected a member.—Mr. Newman exhibited a

series of so-called "gynandromorphs" which he had received, and he then gave an account of his experiences in the field during the present season. Dr. Cockayne exhibited a bred series of *Eupithecia extensaria* from Norfolk, including the normal variation and a few with whitish emphasized lines and two yellowish; Mr. Turner, a reproduction of a water-coloured drawing, date 1588, of *Saturnia pavonia*; Mr. Ashby, for Mr. Rivenhall Goffe, four local species of *Tabanus* (Dip.) and four forms of *Chrysops quadratus*, to be placed in the Society's cabinet; Dr. Bull, an *Epirrhoë alternata* (*sociata*) with the band on the left fore wing twice as wide as that on the right side. Mr. R. Adkin, *Epunda lichenea* taken at light at Eastbourne; Mr. Wakley, living larvae of *Pararge aegeria* from I. of Wight ova, and three "pugs" bred from clematis, *Chloroclystis coronata*, *Gymnoscelis pumilata* and *Tephroclystis isogrammaria*; Mr. Hawkins, *Aspilates gilvaria* with a cross-band and much speckling, etc.; Mr. Eagles, larvae of *Boarmis roboraria* and *Plusia chrysis*; Mr. Downes, larvae of *Euchloris pustulata*, and pointed out the disguise of pieces of leaves, bud scales, etc. Various experiences in the field were reported.

*November 10th.*—Mr. T. H. L. Grosvenor, President, in the Chair.—Mr. Jacobs exhibited *Agrotis exclamatoris* from Ditchling, Sussex; Mr. R. Adkin, series of *Eucosma semifuscana* reared from sawfly growing on the marshes near Eastbourne; Mr. Bunnnett, *Scymnus capitatus* (Col.) and its larva with photographs, etc.; Mr. J. A. Downes, various forms of *Lasiocampa quercus* from S. Devon, Cornwall, Somerset and Sussex, and communicated notes on the characters of the races; Mr. Main, a larva and cocoon of a Javan ant-lion; Dr. Cockayne exhibited larvae of *Anticlea badiata*, including a melanic form, and commented on the melanic tendencies in the larvae of Geometers which had become apparent in recent years. Lantern-slides were exhibited by Mr. R. Adkin and Mr. Bunnnett.

*November 24th.*—The President in the Chair.—Mr. Norman H. Joy, of Reading, Rev. J. H. Marcon, of Chingford, Mr. P. N. Crow, of Maidenhead, Mr. C. T. Louth, of Caversham, and Mr. A. F. O'Farrell were elected members. Mr. Hawkins exhibited a series of *Chlax glaucata*, and drew attention to the extremely rapid emergence of the imago a fortnight after pupation; Mr. Downes showed young larvae of various races of *Lasiocampa quercus*, and gave comparative notes on their characteristics. Mr. Ennis exhibited a series of *Colotois penaria* from Wimbledon, and referred to the year-to-year variation of this species; Mr. Robert Adkin, in exhibiting specimens of *Polygonia c-album* taken in his garden at Eastbourne, remarked on the recent increase in the area over which this species occurred, especially in Sussex; Mr. Blair exhibited larvae of the "Oil-beetles" *Meloe violaceus* and *M. proscarabaeus*, gave notes on the biology of the species, and attempted to elucidate the confusion hitherto existing regarding Newport's statements of 1845; Mr. A. W. Hughes showed a large number of the more local British Lepidoptera, obtained by visiting their known haunts during 1932, and including one *Hydrilla palustris* from the Breck district and an *Aplasta ononaria* at light on the Kent coast.—HY. J. TURNER (*Hon. Editor of Proceedings*).

## COLLECTING NOTES (LEPIDOPTERA): APRIL TILL THE END OF OCTOBER, 1932.

By C. G. M. DE WORMS, F.E.S.

THE early months of 1932, especially March and April, were for the most part very unpropitious. The end of March was extremely wet, while the whole of April was very bleak and chilly. Collecting during this period was mostly unfruitful. During April I paid two visits to Folkestone for the purpose of "sallowing". On the first of these, the 9th and 10th, the only species of note I took was *Xantholeuca croceago*. On the second occasion, the 22nd to the 24th, the sallow blossom was much more productive, providing quite a number of *Taeniocampa miniosa*, a few *T. populeti*, *Xylocampa areola*, *Eupithaëcia abbreviata*, together with plenty of the commoner *Taeniocampas*. On the 24th there were several *Brephos notha* flying round the aspen tops in the sunshine in mid-Kent. On April 30th I travelled with Mr. Dudley Palmer to Ventnor, where, after considerable search, we found several nests and half-grown larvae of *Melitaea cinxia*. They were on the whole much smaller than those I found at the same date in 1931. That evening we proceeded to the New Forest and operated in the Brockenhurst area. We found a number of larvae of *Triphaena fimbria* crawling up the small hawthorn bushes at dusk. To the car headlights were attracted *Selenia bilunaria*, *Pachys strataria*, *Boarmia consonaria* and *B. bistortata*. The following day, May 1st, we saw on the wing plenty of *Pieris rapae* and *Pararge aegeria*. Searching the trunks of isolated pines in the neighbourhood of Lyndhurst yielded a good series of *Boarmia cinctaria*. I obtained a further set of these when I revisited the Forest on the 7th. On May 8th in Dorset I could find only a comparatively few larvae of *Melitaea aurinia*, all full-fed.

I again trekked southward for the Whitsun holiday, May 14th to 16th. In the Itchen Valley I came across a good number of larvae of *Callimorpha dominula* of all sizes. On my way to Swanage I halted in the New Forest, but saw very little on the wing. On the 15th I motored with friends to South Devon in search of *Leucophasia sinapis*, but conditions were too bad for collecting. However, my friends took several in the locality a few days later. On the 20th car headlights in the Berkshire woods produced *Notodonta trepida*, *Saturnia pavonia* (♀) and *Anticlea nigrofasciaria*. Accompanied by Mr. N. G. Wykes, of Eton College, I went up to the Huntingdon Woods on May 21st. Larvae of *Thecla pruni* were more abundant than I have ever known them. We dislodged one or two from almost every suitable sloe-bush. Larvae of *Trichiura crataegi*.

and *Brachionycha sphinx* were as common as in previous years. The week-end of the 28th I spent at Eastbourne, to attend Mr. Adkin's dinner. On the Crumbles we unearthed a few pupae of *Dianthaecia carpophaga*. The next day *Euchloë cardamines* was much in evidence in the woods, as well as many early Geometrids. That afternoon I motored along the coast to Dungeness, where I found a few larvae of *Dasychira fascelina* and *Lasiocampa trifolii*, but had no luck on the Wye Downs at night.

June ushered in a prolonged spell of fine weather, and some very good collecting was experienced during the month. A warm night on the 2nd, near Slough, provided several *Drymonia trimacula*, *Demas coryli*, *Bapta temerata*, *B. bimaculata*, *Gonodontis bidentata* and *Boarmia consortaria*. In some woods in south Surrey on the 3rd plenty of butterflies were on the wing, including *Leucophasia sinapis*, *Brenthis euphrosyne*, *B. selene*, *Nemeobius lucina*, *Hesperia malvae*, together with *Minoa murinata*. I was once more in the New Forest from June 4th to the 6th. On the first night I took *Lithosia sororcula*, *Epione advenaria*, *Eurymene dolabraria*, etc. On the 5th, a fine day, on the Dorset Downs there were flying plenty of *Melitaea aurinia*, *Thecla rubi* and *Lycaena astrarche*.

On the evening of June 10th, a very fine day, I motored down to Ashford, Kent. Between 7 and 8 p.m., on the downs near Wye, I took a nice series of *Scoria lineata* (*dealbata*), just freshly emerged. At dusk I sugared round the Crown chalk-pit. It was not till nearly midnight that any *Pachetra leucophaea* put in an appearance. I boxed about a dozen, of which half were in excellent condition. From a worn female I obtained a large batch of ova, but the young larvae did not survive long. It was too wet on the 11th to do much day-work, but in the evening I joined some friends in the Romney Marsh area. It turned out to be probably the best collecting night of the year. Just after dusk we took a fine fresh series of *Dianthaecia albigula*, both on the wing and at rest. Large numbers of *D. carpophaga* were just emerging, while there were swarms of *Eupithaeca pulchellata* flying round the willow bushes. Sugar provided *Mamestra genistae*, *M. dentina* and *Hecatera serena*, etc. About 1.30 a.m. there began a remarkable flight of *Agrotis cinerea*. We took some fifty in as many minutes. All were of a very large form and extremely variable, ranging from almost white through all shades of grey to nearly black. The only other insect of note was a *Spilosoma urticae*. The 12th was a very bright and warm day. On the downs in the morning I obtained some very nice *Zygaena trifolii* with confluent spots. In the afternoon I motored through mid-Kent to Sussex. Stopping at some woods on the way I found *Brenthis euphrosyne* and *B. selene* flying in good numbers, and saw several Bee-hawks. There were many species

of day-flying moths, *Herminia barbalis*, *Acidalia immutata*, *Eulype hastata*, *Tephrosia luridata* and others. The same night proved fairly fruitful in a wood in south Sussex. The chief visitors to light were *Drymonia trimacula*, *Notodonta trepida*, *Atolmis rubricollis*, *Boarmia consortaria* and many commoner species.

My activities in the field were not renewed until June 17th, when I motored with a friend to Wicken Fen. At dusk we took *Arsilonche albovenosa*, *Senta maritima*, *Meliana flammea* and *Phragmatoecia castaneae*. But the night turned out very disappointing. The following morning we found an abundance of *Papilio machaon*, mostly off colour. The same afternoon we went over to the Huntingdon woods. Larvae of *Zephyrus betulae* were decidedly scarce, but we were fortunate enough to find pupae of *Thecla pruni* in a very short time. They were quite easy to spot on the upperside of the sloe leaves, some quite low down. The next two nights, June 18th and 19th, spent on the edge of the Brecksand district, were very productive. At sugar the only visitor was *Xylophasia sublustris*. We obtained our best bag at light and dusking. We saw scores of *Metopsilus porcellus* dashing about over the campion, but they were very difficult to net. We got a good series of *Neuria reticulata*, several *Arctia villica*, *Dianthaecia carpophaga* (yellow form), *Hecatera serena* and *Eupithaecia venosata*, etc. By day on posts we found a nice lot of *Cucullia umbratica* and a few *Dianthoecia conspersa*. On June 22nd I travelled down for a night to south Sussex, and was fortunate enough to get a good many fresh *Acidalia immorata*.

For my next week-end outing I trecked north. Leaving Euston at 6.30 p.m. on June 24th, I was met by Mr. Dudley Palmer about midnight at Grange-over-Sands, but it was a somewhat late hour to start collecting. The following day we spent on Meathop Moss, where we found *Coenonympha typhon* f. *phloxenus* very abundant. We obtained a splendid series, including two lanceolate forms, but the females were hardly fully out. On the pine trees I found a few *Acronycta menyanthidis*, and there were hosts of day-flying Geometers, chiefly *Acidalia fumata*, *Perconia strigillaria*, and *Bupalus piniaria*, much whiter than the southern form, besides the northern type of *Fidonia atomaria*. The following day, the 26th, we motored to the Langdale Valley, and in very dismal weather ascended nearly 2000 ft. to the plateau on the summit between the two Pikes. On the way up I came across a few *Larentia caesiata*. During a short burst of sunshine Palmer took a fresh male *Erebia epiphron*. Unfortunately I had to return to London that night, but Palmer, who climbed the Pikes two days later, obtained a fine series of *Erebia epiphron* during a sunny period between rain-storms.

(To be continued.)

THE LIFE-HISTORY OF *ACOSMETIA CALIGINOSA*, HB.

BY E. A. COCKAYNE AND C. N. HAWKINS.

(Concluded from p. 39.)

## THE PUPA AND COCOON (C. N. H.).

On August 8th, 1931, I received from Dr. E. A. Cockayne six larvae of this species, which he had reared from some of the ova so generously supplied by Lt.-Col. P. A. Cardew, in order that I might, in due course, attempt a description of the pupa.

The larvae, when received, were almost full fed and, in fact, within 48 hours, two of them were obviously preparing for pupation. At this stage they wandered off the food-plant and rested on the side or top of the box in which they were confined; their colour became a considerably brighter green; all markings faded and they acquired a somewhat transparent appearance, so that their general aspect was as though a thin outer skin had been stripped off.

They were then removed from the box and placed in a large flower-pot nearly filled with slightly damp earth. On the earth I placed a little loose rubbish (bits of dried bracken, etc.) and a leaf or two of *Serratula tinctoria* in case the larvae should wish to pupate on the surface. The pot was covered with fine net stretched tightly over the top and tied in place. During the course of the next 5 or 6 days all the larvae (except one which I preserved) buried themselves in the earth, so there can be no doubt this is the normal course, and that pupation takes place beneath the surface.

The pot was then left untouched until September 22nd, when I decided to investigate and find out how matters had been going on. Not knowing anything of the pupating habits of the species, I proceeded very carefully by gently removing the earth from the surface a little at a time so as not to disturb the pupae before noting their position. I soon found a cocoon, barely half an inch beneath the surface, with a pupa inside, showing through a small hole which I had accidentally made in the cocoon, and eventually I found the other four cocoons all within  $\frac{1}{2}$  or  $\frac{3}{4}$  in. of the surface of the earth. In one case the cocoon was firmly attached to the side of the pot and to a stone. The cocoon is of much the same general shape as that of *Trichiura crataegi*, L., and measures externally from 13 mm. to 14 mm. in length and about 8 mm. in diameter at the widest part. It is quite hard to the touch and can resist considerable pressure. It consists of an outer layer of firmly cemented earth which forms the hard shell, and inside this and firmly attached to it is a thin, papery-looking layer of closely woven grey silk which

forms the actual pupal chamber. The cocoon has fragments of roots, small stones, etc., fixed to the outside which break the regularity of the contour, and render it not easy to distinguish from a rough piece of earth. On opening the cocoons I found my larvae had produced 1 male and 4 female pupae.

The pupa is of the Noctuid type, with well-developed labial palpi but rather unusually stout in build. I could find no appreciable difference in size or shape between the pupae of the two sexes, which surprised me, as the female imago is usually a considerably smaller insect than the male.

The accompanying diagrams (which are drawn to scale), in conjunction with the following description, will, I hope, give a fair idea of the pupa.

The total length of the pupa is  $10\frac{1}{2}$  mm. The transverse diameter at the junction of the metathorax and 1st abdominal segment is 4 mm. (bare), while the dorso-ventral diameter at the same point is 3 mm. The transverse diameter at the widest part of the pupa, about the middle of the 3rd abdominal segment, is  $4\frac{1}{2}$  mm., and the dorso-ventral diameter at the 2nd and 3rd abdominal segments, where the pupa is thickest, is 4 mm. The transverse diameter at the posterior margin of the 4th abdominal is  $3\frac{3}{4}$  mm., and the dorso-ventral diameter at the same point (including the bulge at the apex of the wings) is 4 mm. From this point the pupa tapers fairly evenly to the blunt anal end, which is not quite  $\frac{1}{2}$  mm. in diameter transversely and a little more dorso-ventrally.

Laterally, the 7th abdominal is rather more rounded and prominent than the others, and this feature is not quite sufficiently emphasized in my drawings.

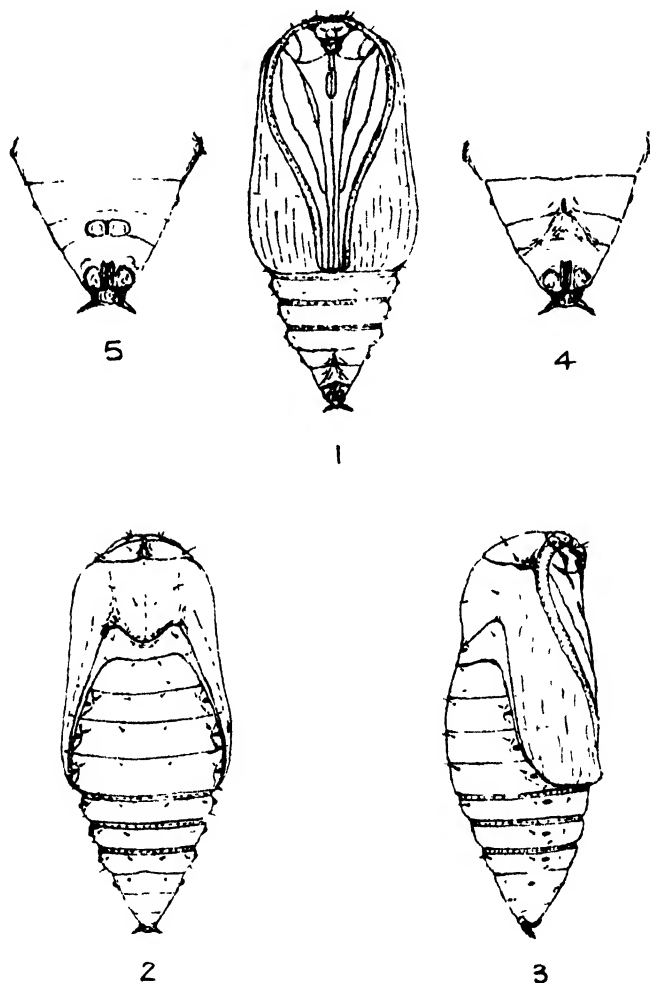
The cremaster is short, broad and blunt, and bears at the end two short strong spines projecting laterally, slightly backward, and rather strongly downward toward the ventral surface.

The colour of the pupa is a moderately pale yellowish brown, slightly tinged with greenish, becoming olive about the head parts, wings, legs, antennae and maxillae. There is a blackish medio-dorsal band of irregular width (really the dorsal vessel showing through the skin) and some scattered dark markings on the body-segments (these also are produced by internal organs, etc.). Abdominal segments 5 and 6 are free, and the intersegmental areas adjoining these are dark also.

The pupal skin is very thin and transparent, so that it is easily possible to see the divisions between the 2nd/3rd and 3rd/4th abdominal segments beneath the wings, and to watch the pulsations of the dorsal vessel. I made a careful count of the latter and found, on September 3rd, there were 13 contractions to the minute. On October 2nd I made a further count and on this occasion found



14 contractions per minute, but in another individual (the male) I found 12 contractions only in each of several counts, so that unless there is a sexual difference, 13 is probably a fair average rate at this period.



*Acosmetia caliginosa*, Hb.—Fig. 1, ventral, fig. 2, dorsal, fig. 3, lateral aspect of female pupa,  $\times 5$  Fig. 4, anal extremity of female; fig. 5, of male pupa,  $\times 10$ .

The length from the front of the pupa to the apices of the wings is  $6\frac{3}{4}$  mm., and the ventral aspect of the 4th abdominal is entirely covered by the wings and enclosed organs. The antennae, 2nd pair of legs, and the maxillae in both sexes extend to a point only

just short of the apices of the wings, whilst the 1st pair of legs extend to a point opposite the posterior margin of the 2nd abdominal segment, which can be seen beneath. The dorsal head-piece is well developed and the line of the epicranial suture distinct. At each side of the dorsal head-piece, where it adjoins the base of an antenna, are markings which have the appearance of a lappet projecting from the base of the antenna, and overlying the dorsal head-piece for rather more than one-third of the distance towards the middle line. These little "lappets" have rounded tips, and at their bases, where they meet the antennae, they cover the whole length of the dorsal head-piece at each side. The face-parts of the pupa (labrum and clypeus) project ventrally so as to form a small "nose". These parts are compressed laterally, particularly at the junction of the labrum and clypeus, and are very dark coloured, so that this "nose" forms a rather conspicuous feature of the pupa.

The prothorax has a median ridge indicating the central suture, which latter is shown as a line on the mesothorax also. On the dorsum of the metathorax is a small, narrow oblong callosity lying across the central area just inside the anterior margin (see figs. 2 and 3 of my drawings). The spiracles (other than the prothoracic) are elongated oval with much raised margins, dark brown externally and greyish internally. No spiracle is visible on abdominal segment 1, and those on abdominal 8 are, as usual, mere raised scars. The spiracles on abdominals 2, 3 and 4 are displaced towards the dorsum, and the skin surface is wrinkled into a kind of loop above them, as though they had been forced up by the wings while the chitin was soft. The prothoracic spiracles are of a compressed oval shape with pointed ends, their rims are not prominently raised, they are very dark coloured, and are situated in the conjunctiva almost at the extreme lateral angles of the prothorax without encroaching at all upon the area of the prothorax, so that they apparently belong to the mesothorax. There are two slight elevations on the ventral surface of abdominals 5 and 6 indicating the situation of the larval prolegs, and there are fairly well-marked proleg scars on the anal segment. The anal scar is almost linear with a raised margin on each side.

The female genital organs are represented by a single short, narrow groove situate in the posterior part of the area of the 8th abdominal, just at the apex of forward extensions of the 9th and 10th abdominals (see fig. 4). The male genitalia are represented by a somewhat similar looking but larger groove in the posterior area of the 9th abdominal. This groove is slightly contracted at about its middle and is bounded on each side by large tubercles, which are, however, much flattened and smoothed over. These

tubercles encroach slightly on the area of the 10th abdominal (see fig. 5).

Approximately the anterior one-third of each of the abdominal segments 3 to 7 (where exposed) is covered with coarse pitting, and on the dorsum this pitting has a tendency to spread over the rest of the surface in an irregular, scattered way. There is a marked increase in the depth of this pitting from abdominal 3 to abdominal 7, it being comparatively weak on the former and strong on the latter with intermediate stages between. The rest of the body-surface is covered with exceedingly fine, irregular, transverse lines or minute corrugations, with some stronger lines scattered amongst them, particularly on the dorsum. These stronger lines are too irregular to indicate subsegmentation, of which there appears to be no trace.

The wings and enclosed organs, head parts and thoracic segments are sculptured all over with little irregular corrugations of very variable strength and pattern. They are strongest, however, on the dorsal surfaces of the pro- and mesothorax and on the head.

In spite of the pitting and sculpturing, the pupa has a moderately shiny appearance.

Tubercles are present, but are often very difficult to distinguish. Each consists of a small circular, or occasionally oval, raised plate of dark-coloured chitin, which frequently (? always unless broken) bears a minute seta. Most of them appear to represent the ordinary larval setae, and I have indicated their positions on my diagrams. As will be seen, seta-bearing tubercles, which I take to be anterior trapezoidals, are present on nearly every segment, but I was unable to find on any of my pupae when living any certain indications of the presence of the posterior trapezoidals on abdominals 2, 3, 4, 5, 6 and 7, nor could I see any tubercles or setae at all on abdominals 9 and 10. However, an examination of a dehiscent pupa, suitably illuminated with transmitted light, showed faint traces (mere spots in the chitin) of very small posterior trapezoidals on abdominals 2, 3, 4 and 5, but they appear to carry no setae.

In addition to the tubercles and setae already mentioned, there are a few other smaller ones bearing still more minute hairs or setae, scattered here and there over the dorsal surface; so far as I can make out these have no regular pattern and do not appear to correspond on opposite sides. There is also one small bristle-like seta on each side of the base of the labrum, or perhaps a little forward of that point; and two more similar setae on each side of the frontal head-piece at the bases of the antennae.

The first imago, a female, emerged during the night of the 29th-30th May, 1932. On dehiscence the pupal legs, maxillae, antennae, head-parts and eye-pieces split away from the rest of the

pupa but remain attached to each other, in fact they appear to come away in one solid piece, although in the course of drying (which causes some curling) antennae and eye-pieces sometimes separate partially from the rest. The prothorax cracks for a very short distance down the centre line from the front, and the whole piece splits away from the other parts of the pupa. Otherwise the pupa remains intact.

In conclusion we should like to express our sincere appreciation of the spirit which has resulted in our having an opportunity to study the early stages of this interesting and very local species.

BRACHIONYCHA SPHINX (CASSINEA) AT LIGHT.—On November 19th, 1932, I joined Mr. Edgar Hare in one of the Huntingdon woods, where the larvae of this species had been plentiful in the spring. The night was mild, with a westerly wind. We placed the car headlights and a petrol vapour lamp on the edge of the wood at 6 p.m., but it was not until 8 o'clock that the first Sprawler arrived. From then onwards till 10 p.m. we were kept very busy, chiefly at the headlights. The insects came in spasmodic rushes about every ten minutes. The biggest rush took place from 9 till 9.30 p.m. We finished up with thirty-three, all males, and mostly only just emerged. On the following night we took a further twenty between the same hours, but rain somewhat spoilt their condition. A week later a friend took a female at light in the same spot.—C. G. M. DE WORMS; Milton Park, Egham, Surrey.

COLIAS CROCEUS IN SUSSEX With reference to the captures recorded in the *Entomologist* for January, re *Colias croceus*, I would like to inform you that I took eleven of this species this last summer in Bexhill and near Bexhill, viz. August 9th, 2 ♀; 19th, 1 ♂, 21st, 1 ♂; 27th, 1 ♂; September 12th, 1 ♂; 27th, 1 ♂; October 4th, 3 ♀, 1 ♂. On the last date the specimens were very sluggish.—J. JACKSON; 2, Crossways Mansions, Bexhill-on-Sea, Sussex

EUCHLOE CARDAMINES.—Respecting the note on p. 283 (vol. 65), I possess a female ab. *dispila* which is also referable to ab. *quadripunctata*, i. e. on the upperside there is a black spot in the centre of each hind wing. It was taken by myself at Dorking, Surrey, in May, 1908.—A. A. W. BUCKSTONE; 42, Pams Way, Ewell, Surrey.

LIMENITIS CAMILLA AND APLECTA ADVENA IN ESSEX.—*L. camilla* still occurs in a large wood in the Colchester district, several having been taken in mid-July last year. A fine specimen of the typical form of *A. advena* was taken at sugar in the same wood on July 19th.—W. S. GILLES; Bocking, Braintree, Essex.

ACHERONTIA (MANDUCA) ATROPOS IN S. DEVON.—An imago and also a larva of *Acherontia atropos* were taken in South Devon last autumn (1932). The larva pupated, and a moth emerged on November 28th, forced.—S. T. STIDSTON; Ashe, Ashburton, S. Devon.

## NEW CARPENTER BEES FROM SOUTH AFRICA.

By T. D. A. COCKERELL.

WHEN my wife and I sailed from Cape Town at the end of November, 1931, we left behind the other members of our expedition, Miss Alice Mackie and Mr. and Mrs. John Ogilvie. They again crossed South Africa, sailing from Beira on June 4th. They collected so diligently and successfully that it was recently estimated that the whole expedition, from first to last, obtained about 40,000 insects. These are of all groups, but special attention was always paid to the bees, some of which are herewith described.

*Xylocopa mensae* sp. n.

♂. Length about 16 mm., anterior wing about 12, width of abdomen 7. Black, including legs: face smooth and shining, reddish yellow, with sparse strong punctures, and clypeus with a broad, smooth median band; supraclypeal yellow area triangular, notched above; lateral marks ending obliquely and very broadly some distance above level of antennae; labrum with a small triangular yellow spot, but mandibles all black; antennae black, the flagellum red at tip, and rufescent beneath toward end; third antennal joint about 512 microns long, the fourth and fifth combined about 336: front dull and granular; below the middle ocellus is a shining cuneiform space, pointing to the short and feeble frontal keel; mesothorax coarsely and irregularly punctured, smooth in middle, scutellum about the same, the punctures small and dense posteriorly; base of metathorax with no distinct area; tegulae black, with an obscure red spot; wings hyaline, the apical field strongly suffused with brown: basal nervure meeting nervulus, and first recurrent meeting intercubitus; hair of head and thorax very dark brown, pallid, in middle of mesopleura, but not approaching white; legs with black hair, red on inner side of anterior tarsi, hind basitarsi with a few pallid hairs mixed with the black toward base; hind trochanters simple; hind femora very stout and broad, obtusely angulate beneath, and near base with a large rounded tubercle; abdomen strongly and quite closely punctured, with rusty black hair, dull white but scanty at sides of first tergite.

Table Mountain, Cape Town, January 26th, 1932 (*J. Ogilvie*).

In the same locality, on the same day, a female was taken, which looked as if it might belong to the same species, but on close examination it was seen to be *X. rufitarsis* Lep.

*X. mensae* is so closely allied to *X. gaullei* Vachal that it might almost be considered a subspecies. The lateral face-marks are much shorter, the clypeus is more densely punctured at sides, and on account of the hair on the legs the species does not run to *X. gaullei* in Vachal's table. In *X. gaullei* the first recurrent nervure

joins the third cubital cell instead of meeting the intercubitus. *X. gaullei* was described from Abyssinia, and is also recorded from Uganda; we found it at Tshibinda, near Lake Kivu.

***Xylocopa vumbensis* sp. n.**

♀. Length about 18 mm, anterior wing 14; robust, black, with entirely black hair; antennae, mandibles and tegulae black; wings very dark fuliginous, opaque, shining brilliant steel blue, with a little violaceous in middle; clypeus densely punctured, with a median keel, falling above; upper border of clypeus smooth and shining, broadened in middle, lateral tubercles distinctly developed but moderate; lower marginal area shining, very broad, interrupted by the keel; lower corners of clypeus coarsely punctate or more or less grooved; frontal keel moderate, reaching more than half-way from ocellus to top of clypeus, no distinct depression below middle ocellus; no keel or tubercle below lateral ocelli; fourth antennal joint about 430 microns long, fifth and sixth together 340; mesothorax well punctured; triangular space at base of metathorax small but well defined; first recurrent nervure meeting intercubitus; hind legs not specially modified; tubercle on hind tibiae beyond the middle; abdomen strongly punctured.

S. Rhodesia: Vumba, Umtali, May 23rd-26th, 2♀ (*Alice Mackie*).

There are no opaque areas at base of tergites 4 and 5, such as occur in *X. rufitarsis* Lep. The insect looks like a miniature *X. fraudulenta* Gribodo. The hind ocelli are a little more remote from occipital margin than from eye. The species partakes of the characters of *X. natalensis* Vachal and *X. carinata* Smith (*io* Vachal), but is distinct from both. A line drawn behind the ocelli strikes the eyes well above the top, as in *X. natalensis*. I examined the type of *X. carinata* in the British Museum, the wings are 17 mm. long, obscure purplish, not green.

There is, however, a possibility of dispute concerning *X. carinata*, as Smith says: "This is the *X. frontalis* of Ferret and Galinier (Voy. en Abyssinie), but not of Olivier and Fabricius; I have therefore changed the name". Vachal remarks that this *frontalis* was probably not the insect described by Smith, but *X. subjuncta* Vach., or *X. taschenbergi* Vach. Smith's actual specimen must have been from Angola. On the whole, it seems that we may accept Smith's specimen as the type, in spite of his statement that he "changed the name".

The wings of *X. vumbensis* closely resemble those of *X. pusulata* Vachal.

***Xylocopa rhodesi* sp. n.**

♂. Length about 17 mm., anterior wing 15.4; black, with tegument of face entirely black; mandibles rufescent apically;

apical part of flagellum rather obscurely rufescent beneath; tegulae pure black; wings strongly fuliginous, very slightly paler basally, brilliantly violaceous, the apex conspicuously produced; pubescence mainly black, but brownish on face, a fringe of pale reddish hair on labrum; lower part of cheeks, and underside of thorax, densely clothed with yellowish-white hair; hair of mesothorax dark brownish grey; no light hair on abdomen; middle and hind tarsi with pale reddish hair on inner side, especially conspicuous on hind tarsi, which have sharply contrasting black hair behind; malar space short; clypeus strongly and densely punctured, with a strong keel extending its whole length, the lower margin very narrowly shining; a deep pit at each side of upper end of clypeus; frontal keel weak, extending more than halfway to clypeus, giving way to a depression below ocellus; sides of face above antennae concave; an oblique smooth band on vertex at each side of ocelli; third antennal joint equal to the next two together; mesothorax with rather fine punctures; scutellum with sparse punctures running in lines; middle of base of metathorax shining and sulcate, but with no enclosure; basal nervure going a little basal of nervulus; first recurrent nervure meeting intercubitus; second cubital cell long, but narrowed nearly to a point on marginal; legs ordinary, the trochanters of hind pair simple, their femora angulate at base below; abdominal venter strongly rufous; abdomen strongly punctured, broadly emarginate, with much black hair, apically.

S. Rhodesia: Matopo Hills, April 17th-30th, 1932 (*J. Ogilvie*).

Differs from *X. rufitarsis* Lep. by the purple wings, strongly carinate clypeus, and absence of opaque spots on abdomen. The carinate clypeus suggests *X. sicheli* Vach. (*colura* Vach.), but the colour of the pubescence is quite different. *X. sicheli* var. *kobroni* Brauns has darker hair, but is still quite distinct from *X. rhodesi*. *X. sicheli* is a much more hairy species in the male sex.

### ***Xylocopa ogilviei* sp. n.**

♀. Length 13.5 to 15.5 mm., anterior wing 12.5; black, with black hair, but thin and obscurely whitish on scutellum and hind part of mesothorax, clear white at sides of tergites 2 to 4 and adjacent parts of sternites (or the white practically reduced to the fourth segment); front and middle tarsi with black hair, red on inner side of front pair; hind tarsi (and a patch at apex of tibiae) with bright red hair, black on inner side (as in *X. gaullei* Vach. and *X. aethiopica* Pér.); mandibles and tegulae black; flagellum very obscurely rufescent beneath; third antennal joint longer than next two together; clypeus dull, with a feeble or almost obsolete carina, lower margin shining and grooved; frontal keel small; an oblique callus on each side of anterior ocellus; mesothorax and scutellum rather sparsely punctured; a well-defined area, extending laterally, at base of metathorax, but it is not separated from post-scutellum; wings very dark fuliginous, shining violaceous (more bluish apically)

but not brilliant; basal nervure going basad of nervulus; second cubital cell broad on marginal; first recurrent nervure meeting intercubitus; abdomen well punctured.

S. Rhodesia: Matopo Hills, April 17th-30th, 2 ♀♀ (*J. Ogilvie*).

Related to *X. gaullei*, but easily known by the white hair at sides of abdomen. The dark wings at once separate it from *X. angolensis* Sm. The colour of the hair separates it from *X. lugubris* Gerst., which is perhaps the closest relative. (*X. lugubris* occurs at Victoria Falls.)

• ***Xylocopa nataliella* sp. n.**

♀. Length 13.5 to 15 mm.; anterior wing 12.5 mm.; black, shining, with the aspect of *X. sicheli* Vachal, but without the teeth on underside of mandibles; pubescence entirely black; flagellum obscurely reddish beneath except basally; third antennal joint conspicuously longer than next two together; wings extremely dark fuliginous, shining rosy violaceous in the region of the cells, but the general effect not very brilliant; basal nervure meeting nervulus; first recurrent nervure meeting intercubitus; second cubital cell short, with all the sides practically straight, the margin on marginal cell not broad (in *X. purpurina* Ckll the inner corner of the cell is much more produced); tubercle of hind tibia ending in a single dagger-like point, the other lobe rudimentary. This looks at first sight like *X. purpurina*, but the abdomen is more strongly and closely punctured, and therefore duller, as in *X. natalensis* Vachal. A perfectly decisive character is found in the base of the mandible, which presents a spoon-like structure and a channel below it. This is essentially as in *X. natalensis*, but in *X. purpurina* the base is very wide, with a broad surface enclosed in the arms of a shining Y. The densely punctured clypeus has a vaguely indicated median carina, wholly absent in *X. purpurina*. The sides of the vertex are finely rugoso-punctate, not coarsely and distinctly punctured as in *X. purpurina*. Thus the insect must be considered a diminutive derivative from *X. natalensis*, but sufficiently distinct to stand as a species. So far as the brief description shows, *X. montana* Enderl., taken at 1540 m. on Mt. Kilimandjaro, must be very similar.

Natal: National Park, March 3rd-15th, 1932 (*Alice Mackie*; *John Ogilvie*).

The types of the above species will be placed in the British Museum.

SOUTH-WESTERLY DRIFT OF POLYGONIA C-ALBUM.—This interesting butterfly was noted in several localities in South Devon last year, 1932. Torquay has several records, whilst it has been noted at Okehampton in mid-Devon, and also near Honiton. I have only heard of these occurrences casually, and no doubt if all the records were known, we should find the species well distributed, though rare, throughout the county, with the exception of the Western districts. —S. T. STIDSTON; Ashe, Ashburton, S. Devon.



**FAUNIS (LEP. AMATH.): REVISIONAL LIST.**

By C. JOSLIN BROOKS, F.I.C., F.E.S.

THE following list of the genus *Faunis* is the issue of a revision of the series in the British Museum. The acquisition of much new material necessitated a complete rearrangement of the specimens, which has been done in accordance with Fruhstorfer's system in Seitz' *Macrolep.*, 9, excepting *Faunula*, which I have withdrawn from his list as having features distinct from *Faunis*, allowing it to remain in *Melanocyma*, Westwood's genus for this species. Some new species have been added, and from long series of specimens differences are shown which need recognition as separate races.

*Faunis* Hbn.

**F. arcesilaus F.**—Bhutan, Assam, Siam, Tonkin, Burma, and Malaya. It appears to be a rare insect at Sikkim, while well represented from the Khasia Hills, Shillong and Silhet. The northern examples are decidedly darker on the upperside than specimens from Burma, Siam, Tenasserim, and Malaya: of the Tonkin race I have no knowledge. On the underside the medial line is clearly defined, but in specimens from Malaya a distinct thickening takes place with a less clear outline; on Sumatra, whence the form has hitherto been included with those of the Continent, the thickening is so apparent as to become a distinguishing feature calling for separate recognition.

**F. a. sumatrensis ssp. nov.**—♂ Underside. Somewhat darker brown than the Continental *arcesilaus*, and with slightly thicker medial lines.

♀ Underside: Ground-colour as in Malayan specimens, the medial lines in both wings broadened, that in the lower wing to a narrow band, wider toward the anal angle, with indistinct edges; the submarginal lines also thicker.

Broad medial lines distinguish the island races from those of the Continent.

**F. a. borneensis** Fruhst.—Borneo, and Natuna Islands. A rare insect; only two males from Borneo have come under my notice.

**F. a. tenuitata** v. Ecke.—Simalur.

**F. a. pallidior** Hag.—Mentawej Islands.

**F. a. samadhi** Fruhst.—Batu Islands.

**F. a. niasana** Fruhst.—Nias.

**F. a. bankensis** Roths.—Banka.

**F. a. caneus** Hbn.—Java.

**F. a. cyme** Fruhst.—E. Java.

**F. a. baliensis** Roths.—Bali.

**F. kirata** Nicév.—Perak, Borneo, and Sumatra.

**F. gracilis** Btlr.—Malaya, Borneo, and Sumatra. Judging from the few specimens from Malaya it may be concluded that it is rare. They are smaller than those from Borneo and Sumatra. The species is subject to variation in the intensity of the markings on the underside.

**F. g. ab. adamsi ab. nov.**—A ♂ from Sumatra in the Adams Coll. (in B.M.) has the underside median and sub-basal lines so thickened as to give the appearance of broad bands across the wings, somewhat lighter in the centre.

**F. stomphax** Westw.—Borneo and Sumatra. The latter island is not represented in the Museum, nor did the species come under my notice when collecting in W. Sumatra. A long series from localities in North and East Borneo may be divided into three groups :

(i) Those with a prominent white band on the underside of the fore wing ♂ and ♀, represented by the type, *stomphax*.

(ii) **caecus form. nov.**—A form of the *stomphax* race in which the white band is absent.

(iii) Race *barraulti* Moulton.—A large race from Kina Balu in which the white band is absent or only slightly indicated in the females, only 6 in a series of 26 showing any indication of it ; in 61 males it is absent. In one specimen labelled “Kina Balu” a well-developed band occurs, but judging from its small size it may have originated from neighbouring slopes and so not belong to this race. There are no data to show whether the white band is a seasonal or local characteristic ; in the writer’s opinion the latter seems more probable, as all specimens taken by him in Upper Sarawak had this distinction. Moulton’s description of *barraulti* (*Entomologist*, 48 : 99) is founded on a specimen taken on Kina Balu, thus designating this race.

**F. s. besu** Hew.—N. Borneo. Specimens of *caecus* are frequently confused with this form, which is well represented in the Museum. It is easily distinguished by the very large ocelli on the underside of the hind wing. That at the anterior end terminates the medial line, as in *phaon*, which it closely resembles. In *caecus* the line passes above to the margin.

**F. s. plateni** Stgr.—Palawan.

**F. s. lautensis** Roths.—Pulo Laut.

**F. phaon** Er.—Philippines. The dry season form is *microps* Stgr.

**F. p. ikonion** Fruhst.—Philippines.

**F. p. carfinia** Fruhst.—Philippines.

**F. p. lurida** Fldr.—Philippines.

**F. p. sumatranus** Roths.—Sumatra.

**F. lucis** Fldr.—S. Philippines. In a long series of both sexes no variation occurs on the upperside, while the underside is subject

to considerable differences both in size of ocelli and depth of colour ; the former may be bigger than those of *phaon*, while the colour may be a uniform dark brown or a light suffusion generally, more especially between the margin and the medial band of the upper wing, which is most pronounced in the females ; the lines vary in an equivalent degree.

**F. menado** Hew.—The numerous races on Celebes show to a marked extent the geographic variation characteristic of this island ; they may be divided into two groups by the absence or occurrence of ocelli in the apical angle of the fore-wing underside.

GROUP I.—OCELLI ABSENT. NORTH AND CENTRAL CELEBES.

*F. m. menado*.—N. Celebes.

*F. m. zenica* Fruhst.—Cent. Celebes.

**F. m. klados** ssp. nov.—♂. Larger than *menado* ; upperside similarly coloured, the white band crossing the apex of the underside distinctly visible through the membrane. Underside : Both wings, ground-colour deep warm brown, slightly darker within the area enclosed by the median band ; a prominent uninterrupted, light blue band crossing the angle of the fore wing ; the dark markings on both wings not conspicuous. Hind wing : Two ocelli smaller than in the ♂ *zenica*, also as in *zenica* three minute white spots in the band between the ocelli ; these spots occur only in these two races, while those at the angle of the fore wing are common to all.

♀. Larger than the ♂. Upperside : Both wings a deeper brown than the ♀ *menado*, with a more extended dark area at the apex and borders of the wings, the white band of the underside visible. Underside : Both wings a somewhat lighter and greyer brown ground-colour than the ♂. A continuous white band crossing the apex of the fore wing ; otherwise markings, ocelli and spots as in the ♂.

The habitat is given as “ Ropa ”, Cent. Celebes. I am unable to locate this place on a large-scale map of the Island unless it is an abbreviation of Beropa.

Types only.

GROUP II.—OCELLI PROMINENT. EAST AND SOUTH CELEBES.

*F. m. pleonasma* Rob.—E. Celebes. A very distinct race.

*F. m. chitone* Hew. S. Celebes. A long series show a wide range of variation.

*F. m. fruhstorferi* Rob. S. Celebes. Peak of Bonthain 3–5000 ft.

*F. m. intermedia* Rob.—Bangkai Island.

*F. m. syllus* Fruhst.—Sangir.

*F. m. suluana* Fruhst.—Sula-Mangoli.

**F. sappho** Semp.—Philippines, Bohol.

*F. s. kleis* Semp.—Philippines, Samar.

*F. s. ameinokleia* Fruhst.—Philippines, Camiguin de Mindanao.

**F. eumeus** Drury.—Hong Kong, Macao Island and Hainan. Specimens from Hainan have a more extended light area in the apical angle underside.

*F. e. incerta* Stgr.—Tonkin, Burma, Annam, and Siam.

*F. e. moiarum* Fruhst.—Annam Mountains.

**F. assama** Westw.—Assam.

**F. aerepe** Leech.—From the Tibetan Border, Central, West and South China the Museum possesses a series numbering over 760 specimens; these show remarkable persistence in form; the upperside colouring is the same throughout, while minor variations on the underside call for no comment.

♀. **ab. indistincta ab. nov.**—This aberration occurs among the specimens from Siao-Lou. The upperside resembles that of the normal ♀, but the lines on the underside are blurred and very faintly indicated.

*F. a. yunnanensis* **ssp. nov.**—♀. Smaller than the typical *aerepe* ♀. Upper wing somewhat rounder at the apex. Upperside: Both wings the usual satin-grey ground-colour with the suggestion of a blue tint; the dark area at the apical angle of the fore wing reaches to the tornus, suffusing from the margin to one-third of the wing area; on the lower wing the dark border broadly suffused into the grey. Underside: As in *aerepe*.

1 ♀, from the Oberthur Collection. The label is inscribed: "Bahand Yunnan. Recu du Père Ouvrard, Missionnaire apostol. à Oui-ou, Wei-Si. Yunnan, China en janvier 1917".

*F. a. excelsa* Fruhst.—Tonkin.

For the opportunity to publish this work I desire to record my thanks to the Trustees of the British Museum, wherein all the types are to be found.

**PLUSIA MONETA, F., AT REST.**—In the last volume of the *Entomologist* at p. 134 and on plate iv, fig. 11, Mr. Frohawk described and illustrated a resting attitude for *Plusia moneta*, F., when on the ground. I have only once found this species at rest in the open under natural conditions, and that was in a garden at Bury St. Edmunds in the early morning of July 23rd, 1918, when I came across a specimen at rest on a plant of *Phlox*. The moth in this case was hanging amongst the leaves in what seems to be the typical Plusiid attitude, head downwards in an almost perpendicular position, supported chiefly by the long and strong third (metathoracic) pair of legs, which were stretched out behind it. It was by mere chance that I noticed it, as its resemblance to a piece of dried and curled leaf was remarkable.—C. N. HAWKINS; 23, Dalebury Road, S.W. 17.

A NEW *DELIAS* FROM THE MALAY PENINSULA.  
(LEPIDOPTERA: *PIERIDAE*.)

By A. STEVEN CORBET.

*Delias agostina johnsoni* subsp. nov.

♂. *Upperside*: As in typical *D. agostina agostina* from Sikkim, but the apical markings on the fore wing are much paler, and the white, contiguous, submarginal spots placed on the shaded apical area are distinctly narrower.

*Underside*: Resembles *D. agostina agostina* from Sikkim, except that the black dusting is decidedly paler and greyer.

Wing expanse, 65.5 mm.

Type: Maxwell's Hill (2000 ft.), Perak, Malay Peninsula, 1913-1923 (C. T. Johnson), B.M. Type No. Rh. 413. A second male from the same locality and taken by the same collector does not differ.

Both specimens are in the British Museum (Natural History), ex Coll. Joicey.

I have pleasure in associating this first record of *Delias agostina* from the Malay Peninsula with the name of Mr. C. T. Johnson.

A male in the British Museum (Natural History) from Chiengrai, North Siam, taken in December, 1922, by Mr. E. J. Godfrey is slightly smaller than *johnsoni* and, as far as the intensity of the apical markings on the upperside of the fore wing is concerned, intermediate between examples from Perak and Upper Burma.

The races of *D. agostina* now known are: *agostina* Hew. (= *infumata* Fruh.), Sikkim and Burma, *annamitica* Fruh., South Annam; *orita* Fruh., Tonkin; *johnsoni* Corbet, Malay Peninsula.

"Elm Lodge,"  
Earley,  
Berks

NOTES AND OBSERVATIONS.

*LEUCOMA SALICIS*, L.—Dr. Cockayne asks in the December issue whether there is any evidence that our native stock of this species is replenished by immigrants. Apparently it is possible that we do receive fresh blood from the Continent, as I have been informed by Mr. W. B. Pratt that towards the end of August, 1900, when he was crossing from Queenborough to Flushing, a large number of these moths were observed about ten miles out from Flushing about 5 a.m., all flying in a north-west direction. The weather was hazy and there was no wind. One alighted on the deck and was captured for identification purposes. I used to take the larva frequently in Gloucestershire several years ago, but I do not remember having seen any for some seasons now, though I picked up a dead moth at Fetcham, Leatherhead, in the summer of 1931.—H. J. BURKILL; Brincliffe, Fetcham, Leatherhead.

**TAENIOCAMPA OPTIMA IN SURREY.**—Respecting the note on p. 285 (vol. 65), this species has been taken sparingly on Wimbledon Common for many years, and I was present on one or two occasions about twenty years ago when single specimens were captured.—A. A. W. BUCKSTONE; 42, Pams Way, Ewell, Surrey.

**CORDULEGASTER ANNULATUS (LATR.) IN RICHMOND PARK.**—As there seems no record of this insect nearer South London than Esher Common (the late Mr. Lucas in the *Entomologist*, 34: 67), the following notes given me last year by the late Mr. J. Rudge Harding seem to interest. (I transcribe his notes)

“23/6/12. Richmond Park. In Isabella plantation an enormous dragonfly with huge head and long abdomen chequered black yellow.”

“28/6/13. Saw the dragonfly again. Body black and yellow, like a wasp, and black yellow head. *Cordulegaster annulatus* (?)”

“24/7/13 *Cordulegaster* like a brilliant flashing meteor against the dark trees—Isabella plantation.”

“17/9/16 Isabella plantation. A great dragonfly—yellow and black horizontal stripes. Has it a spine in its tail?”

I have worked the Park these last two seasons for the species in vain; there is a stream flowing from the Isabella plantation (and others in other parts of the Park) quite suitable for its habits; also those on the slopes of Wimbledon Common.—H. G. ATTLEE; 9, Florence Road, Sanderstead, Surrey.

**PECULIARITIES OF THE SEASON 1932**—*Cyaniris argyrolus* was conspicuous by its complete absence in many parts of Surrey visited in the spring, and in the summer but one solitary male example was seen on Clapham Common—a place where I have never met with it before. *Heodes phlaeas* was seen once only in the spring, near Ewell, Surrey, and about a dozen examples over a wide area in Surrey, Kent and Sussex in the summer. No *Gonepteryx rhamni* were seen at all in the spring on the North Downs, and only one solitary male in the summer. On the other hand, *Polyommatus icarus* and *Agriades bellargus* have been common on the North Downs. On August 8th I netted in Sussex a perfect *Nisus tages* in bred condition, which surely must have been one of a second brood. At the end of July, also in Surrey, I took a fine male ab. *fowleri* of *Agriades coridon*.—A. E. STAFFORD; 83, Colborne Way, Worcester Park, Surrey

**IMMIGRANT LEPIDOPTERA, 1932.**—As the entries given on my authority on pp 19 and 20 have been somewhat confused, I shall be glad of space to correct them. In the first place I do not live at Probus, but at Tresillian, to which most of the notes refer. Probus was merely our post town, and it is 2½ miles away, since January 1st and until further notice Truro has become our post town, and that is 2¾ miles in just the opposite direction. Will correspondents please note, therefore, that my address is now as below?

*Colias croceus*.—“7.vii.32 Land's End” was omitted, and Perranporth sand dunes should be added on the authority of a friend who has a house there and knows this species very well;

he says he saw about 40 specimens on the dunes July 7th to 16th, and again others round about August 10th. One var. *helice* crossed our garden quite close to me on September 15th. The records for May 16th and August 31st should read "Tresillian", not "Probus," as both specimens were seen in the garden.

*Pyrameis atalanta*.—"5.ix.23 Probus" should read "15. ix.32 Tresillian".

*P. cardui*.—A specimen was seen on *Buddleia* flowers in the garden on August 12th, 16th, 25th and 26th, and in all probability it was the same one throughout. I saw nothing more of the species elsewhere in 1932.

*Plusia gamma*.—"Tresillian" should be substituted for "Probus", and I would add that this species appeared in about normal numbers.

*Nomophila noctuella*.—"Tresillian" should be substituted for "Probus", and I apologize for reporting it as "at light". This was an oversight, for the specimen was noticed in the verandah in the afternoon in bright sunshine.

*Pionea ferrugalis*.—One each night at light, both in good condition, October 2nd and November 25th.

The three "Whites" were exceptionally abundant in their second broods, as also were *Vanessa io* and *Pyrameis atalanta* in the autumn, and *Aglais urticae* was much commoner than it has been of recent years; but I have no evidence of any immigration of any of these species. The larvae of *Pieris brassicae* have been very destructive to broccoli and other cabbage crops in gardens, but the huge fields out in the open have largely escaped, except round the margins in some cases. On my discussing the reason for this with various interested people, the conclusion was arrived at that this butterfly preferred the shelter of gardens and the hedges round fields, and this is rather confirmative of the suggestion that this species is essentially a lover of more warmth than is customary in Britain.—C. NICHOLSON; Tresillian, Truro, Cornwall, January, 1933.

IMMIGRANTS IN SOUTH DEVON.—*Colias croceus* was not uncommon in South Devon last year (1932), and I have met with it in several localities, both inland and on the coast. The first butterfly was observed on Newton Abbot golf links on August 6th. *Pyrameis cardui* was very scarce the whole year; *Pyrameis atalanta* was scarce in the spring, but I noted several on the blossoms in the autumn. I think, however, the most interesting note is of *Plusia gamma*. This insect was very much below numbers in the spring, but in the autumn, here at Ashburton, it was extraordinarily abundant—so markedly so that I wrote a few friends, who confirmed my view, I first noticed the abundance on October 5th, but I am afraid that my friends' dates varied from mine and from each other. It would appear, however, as if there had been an autumnal migration from the Continent.—S. T. STIDSTON; Ashe, Ashburton, S. Devon.

BUTTERFLIES ATTACKED BY BIRDS: INFORMATION WANTED.—I am making an investigation into the extent to which butterflies in the perfect or imaginal state are preyed upon in the British Isles

by birds, and should be grateful for any first-hand observations, giving, where possible, the species of both butterfly and bird, the date and locality, whether taken at rest or on the wing, how gripped (by wings or body), whether killed by being rubbed against an object, whether consumed by adult or young, whether the wings were swallowed, whether unsuccessful attempts at catching were noticed, and other details of interest. Wings detached by the bird are of value, both as evidence of identity, and also by reason of the imprint of the bird's beak, which is sometimes shown.

Published records up to and including the year 1908 have been summarized in the admirable paper by Sir Guy Marshall, C.M.G., F.R.S., *Birds as a Factor in the Production of Mimetic Resemblances among Butterflies* (*Trans. Ent. Soc. Lond.*, 1909, pp 329-383). I am making a search in both entomological and ornithological literature for British records published since this date, but as such are frequently not indexed, and are easily missed, I should also be most grateful for any references which may be known to your readers, especially in the less well-known publications.

Communications can be sent to me, c/o the Entomological Dept., British Museum (Natural History), South Kensington, London, S.W. 7.—C. L. COLLENETTE.

CENTENARY MEETING OF THE ENTOMOLOGICAL SOCIETY OF LONDON, 1833-1933.—The Society completes the first hundred years of its existence on May 3rd, 1933, and it is proposed to celebrate its centenary on that and the following day. The following provisional programme has been arranged :

*Wednesday, May 3rd.*—3 p.m. ; A general meeting of the Society for the reception of delegates and presentation of addresses in the rooms of the Royal Geographical Society, Kensington Gore. 8.30 p.m. : A scientific conversazione, to which Fellows are invited to bring exhibits.

*Thursday, May 4th.*—9.30 p.m. : A reception given by His Majesty's Government to the Fellows of the Society at Lancaster House, St. James's, S.W. 1. Major the Right Hon. Walter Elliot, M.C., M.P., Minister of Agriculture and Fisheries, will receive the guests.

In order that the Council may have some indication of the numbers for which it will be necessary to provide accommodation, Fellows of the Society are asked to inform the Secretary, 41, Queen's Gate, London, S.W. 7, *as soon as possible*, (1) whether they propose to attend the scientific conversazione to be held at 8.30 p.m. on Wednesday, May 3rd ; (2) whether they propose to make exhibits on that occasion.—S. A. NEAVE, *Honorary Secretary*.

## SOCIETIES.

LANCASHIRE AND CHESHIRE ENTOMOLOGICAL SOCIETY.—*Tuesday, October 18th, 1932.*—The meeting was devoted to exhibits of the past season's work, and in spite of the generally unfavourable weather of



a good part of the summer, some very interesting captures were shown. Mr. R. Tait brought bred series of *Hipparchia semele*, *Agrotis ashworthii* and *Macrothylacia rubi* from Welsh larvae; *Tryphaena fimbria*, including the "mahogany" form from larvae taken in Delamere Forest; *Plusia moneta* from Surrey; *Agrotis lunigera* taken at rest at Penmaenmawr; and a series of *Asphalia ridens*, including a fine melanic specimen, from the New Forest. Mr. S. Gordon Smith exhibited a box of *Vanessa urticae* showing much minor variation, together with some very fine var. *polaris*; a long series of *Pieris brassicae* included the "dumb-bell" form, and a variation having the veins of the hind wings, underside, heavily marked with black scales; *Arctia caia* with some nice varieties; *Lycaena icarus*, a varied series; a specimen of *Nonagria geminipuncta* taken at light at Chester and varieties of *Camptogramma bilineata*, *Cerura bifida* and *Lampropteryx suffumata*. The same exhibit included series of *Amphidasys betularia*, *A. strataria*, *Biston hirtaria* and hybrid *B. hirtaria* × *Nyssia zonaria*. Mr. W. Mansbridge had the following from Grange-over-Sands and Witherslack: *Emmelesia taeniata*, red *Taeniocampa gracilis*, *Peronea rufana*, *P. lipsiana*, and a single specimen of *P. mucana*; also a short series of *Hypenodes costaestrigalis* and, from Formby, a series of *Eupithecia pygmaeata*. Mr. H. B. Prince brought a large exhibit of exotic Lepidoptera collected by the Rev. A. Miles Moss in Para; many rare and beautiful species of Sphingidae were included in this exhibit. Mr. G. A. Longworth showed a nice lot of insects, mostly bred, comprising: *Bombyx quercus*, *Noctua bava*, *Noctua glareosa*, *Leucania littoralis* from Formby; *Noctua festiva*, *Mamestra furva*, *Caradrina quadripunctata* and *Lygris populata* from Moel Fannau, N. Wales; also *Ennomos autumnaria* (Dover), *Calocampa solidaginis* (Arran), *Xylomyges conspiciellaris* (Taunton), *Leucania turca*, *Brephos notha*, *Leucophasia sinapis*, and a specimen of *Dicranura vinula* which had been two years in pupa. The following were bred from continental ova: *Apatura iris*, *Lymantria dispar* and *Valeria oleagina*. Mr. R. Wilding exhibited his series of the scarce *Ocyrops cyaneus* and a drawer of his fine collection of Coleoptera. —H. W. W.

ENTOMOLOGICAL CLUB.—A meeting of the Entomological Club was held at the Museum, Tring Park, on October 29th, 1932, Lord Rothschild in the Chair. Members present in addition to the Chairman: Mr. Robt. Adkin, Mr. Horace Donisthorpe, Prof. E. B. Poulton, Mr. H. Willoughby-Ellis, Mr. Jas. E. Collin, Mr. W. J. Kaye. Visitors present: Mr. H. E. Andrewes, Major E. E. Austen, Mr. E. C. Bedwell, Mr. K. G. Blair, Dr. E. A. Cockayne, Mr. C. L. Collenette, Dr. F. A. Dixey, Mr. H. M. Edelsten, Sir Stanley Flower, Mr. F. W. Frohawk, Mr. Philip P. Graves, Dr. G. D. Hale Carpenter, Capt. Francis Hemming, Mr. H. R. Hewer, Dr. Karl Jordan, Mr. F. Laing, Sir Guy A. K. Marshall, Rev. A. Miles Moss, Dr. S. A. Neave, Mr. Chas. Oldham, Mr. Louis B. Prout, Mr. W. P. Pycraft, Mr. W. Rait-Smith, Capt. N. D. Riley, Mr. Hy. Turner, Mr. Edwin C. Van Dyke, Mr. Colbran J. Wainwright, Comm. J. J. Walker, Rev. Geo. Wheeler. The meeting was called for 11 o'clock in the morning,

and the members and guests were received by Lord Rothschild at the Museum, where the entomological and other collections were open for inspection. Two special exhibits were also made by Lord Rothschild, namely, the collection of British Micros and the collection of the Arctiids of the World, contained in 220 drawers. Both collections were arranged by Lord Rothschild himself. The Arctiid collection is of particular interest. It contains a large number of types, and is especially rich in material from South America and New Guinea. The genera are arranged in the order adopted in Hampson's Lepidoptera Phalaenae, and as in that classification neuration is paramount (mere convergences in the development of the neuration being mistaken for evidence of relationship), the sequence of genera is frequently quite artificial. Yet, until the family is thoroughly worked out, it has been deemed advisable for practical considerations to keep to Hampson's arrangement. In looking over the collection as exhibited, one was rather forcibly struck by the contrast in outward appearance between the Arctiids of the Old World and those of the neo-tropical region. The majority of the African and Indo-Australian species conform more or less closely to the familiar *Spilosoma* and *Diacrisia* type. In Central and South America, on the other hand, the majority of species classified as Arctiids are more graceful in build, the fore wing being narrow and the hind wing shortened and the colouring frequently strongly marked, many of them looking more like the Syntomids of the same region than the European Arctiids. The caterpillars, as far as is known, are all of the rough, woolly-bear type. they feed on low plants and some seek their food under water (*Rhyparia metelkana* in Hungary and *palustra* in South America, for instance), their dense coat of bristles retaining enough air to enable the caterpillar to live under water for some time; specimens of these caterpillars are in the collection. The Arctiids, always a favourite group at Tring, are at the present time believed to be the most complete and best collection of this subfamily. They include 648 types, of which 5 were described by Sir George Hampson, 23 by Felder, 1 by Guerin and 619 by Lord Rothschild himself. A special feature of the collection is the large series of most of the species; for instance, of *Spilosoma turbida*, But., which is represented in the British Museum Collection by one specimen only, Butler's type, there are in the Tring collection 41 males and 14 females. Of our cream-spot tiger *Arctia villica* and its local races the collection embodies 500 specimens in the general series exhibited, and over 100 more in Lord Rothschild's purely British Collection. In the South American species the large series were collected mostly by the Rev. A. Miles Moss, R. Spitz, S. N. Cloges and the elder Le Moult. Also in the Indo-Australian section the bulk of the larger species were collected by A. S. Meek, W. Doherty, A. Eichorn and A. Everett. A number of Oriental species came from the van de Poll Collection; the Algerian series were collected by Lord Rothschild and his staff, also by Dr. Chr. Nissen and Victor Farault (the latter under Lord Rothschild's directions); and the Moroccan series by Dr. E. Hartert and some helpers. Much interest was shown by the party in the

exhibits, which were fully explained by Lord Rothschild. Luncheon was served at 1 o'clock, after which Mr. Collin exhibited a specimen of *Leria* (*Spanoparea*) *dudai*, Czerny, a Dipteron new to the British list, taken at Tubney Wood near Oxford, on October 2nd, 1932, during the week-end when the Club met at Oxford. The species was described in 1924 from a pair taken at Nimptsch in Silesia, the specimen exhibited being the only other recorded capture since the description was published. After luncheon the various collections in the Museum were again inspected, and after a most pleasant day the members and visitors left about 4 o'clock.—H. W.-E.

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## OBITUARY.

### WILLIAM JOHN KERR.

On December 13th last, after a short illness, Mr. W. J. Kerr passed away in his 79th year.

Mr. Kerr, the eldest son of the late Wm. Kerr, J.P., of Marsmor Corwen, Denbighshire, came from an old and distinguished family who have resided in Denbighshire for the last 300 years. As a young man he lived at St. Andrews, N.B., for seven years, but did not do much entomological work there. Going back to Wales he acted for some years as agent to the late Mr. W. G. Oakley, the wealthy owner of the well-known Penrhyn Slate Quarries. Mr. Kerr went from Wales to Cromer, Norfolk, where he resided for twenty-one years, and during this period he did a great deal of collecting in Scotland and Ireland, as well as locally. He lived at Torquay from 1922 till his death.

Mr. Kerr was a good all-round naturalist and sportsman, a keen entomologist and an active collector up to the last; his collection, which goes to his son-in-law, Flight-Lieut. C. W. H. Molier, also a keen entomologist, contained several remarkable varieties of the British Lepidoptera taken by himself. He was the discoverer of the only Welsh locality, as far as the writer knows, of *Coenonympha tiphon*—a wild district near Festiniog. An account of this discovery is given by the late Rowland Brown in Oberthür's *Études des Lépidoptérologie comparée*. Another noteworthy find was in September, 1926, when he was lucky enough to take three examples (2 ♂ and 1 ♀) of *Lampides baeticus* in his own garden, as well as seeing others on at least six separate occasions; an account of these captures is given by him in a note in the *Entomologist*, 59: 312. Mr. Kerr's very beautiful garden at Faldonside was a most prolific collecting ground; *Celerio livornica* and other rare immigrants were taken there almost yearly.

Mr. Kerr was of a very retiring disposition, and although he was always pleased to see any entomologist, it was very few who knew him at all well, but those he honoured with his friendship found in him a most loyal and devoted friend and the finest type of an English country gentleman.

W. R.-S.

# THE ENTOMOLOGIST

VOL. LXVI.]

APRIL, 1933.

[No. 839]

## NOTES ON THE LEPIDOPTERA OF WORCESTERSHIRE, JULY TO NOVEMBER, 1932.

BY E. P. WHITCOMBE.

*July.*—Except for a hot spell between the 7th and 12th, day temperatures during July were moderate or low, rising slightly towards the end of the month. Warm nights occurred during the second and last weeks. Rain fell on many days. *Plusia iota* appeared on the 1st, and I also found *Xylophasia hepatica*. On the 2nd I took *Cybosia (Lithosia) mesomella* at light. *Hygrochoa (Pericallia) syringaria* appeared on the 5th; *Lophopteryx camelina* on the 7th. On the 8th I found *Thyatira batis*, and *Habrosyne detersa* appeared on the 11th. The latter was plentiful later, but I saw only one further specimen of *T. batis*. The 9th was the warmest day of the month. That evening marked the first appearance of *Plusia moneta*, *Lygris associata*, *Anticlea rubidata* and *Amoeba viridaria*. On the 12th I took *Euchloris pustulata*—the only specimen this season. *Hemithea strigata* had appeared on the 3rd, and was abundant. *Geometra papilionaria* appeared on the 14th and I took several specimens later, also of *G. vernaria*, which first appeared on the 20th. Other emergences at that period were *Cidaria pyraliata* (14th), *Cerigo matura* (18th), *Mesoleuca bicolorata* (19th), *Naenia typica*, *Acidalia trigeminata* and *Perizoma alchemillata* (24th). *Malacosoma neustria* appeared on the 28th and was fairly plentiful over a very short period. From the 11th onwards *Cosmotriche potatoe* was a frequent visitor to the light. I saw a specimen, rather damaged, as late as August 20th. On July 29th I took *Lithosia sericea*, a single specimen at light. *L. lurideola* had first appeared on the 26th, and is always plentiful here. I have never taken typical *L. complana*. On the 30th *Triphosa dubitata* and *Bombycia viminalis* appeared. I did not find July a particularly good month for Noctuas. For the first fortnight sugar proved so ineffective that I discontinued it. It might have been more productive during the last week, for I found it so early in August.

*August.* Up to the 20th the month of August was warm and rainfall was slight. This period also included the moonless phase. Conditions looked ideal for sugar, but though there was a large attendance some nights I have not found it a specially good year for Noctuas. Even some of the quite common species were absent or scarce. Though I did no sugaring during the second half of July, I kept regular observation with a powerful light.

On August 1st *Arctia caja* (♀) came to light. On the 2nd I took a second-brood *Lobophora viretata*. The next night *Plusia moneta* came to the light—the first I had seen since July 9th; I also took *Xylophasia scolopacina*. During the next few days new arrivals were: *Crocallis elinguaris* (4th), *Cilix glaucata* (5th), *Lygris prunata* and *Leucania conigera* (6th), *Miana literosa* (8th), *Acronycta rumicis* (9th). On the 9th I also took *Prothymnia viridaria*—rather a late appearance, and the only specimen of the season. On the 11th I took, at light, a species of *Nonagria* which I believe to be *N. arundineta*, Schmidt (the *neurica* of Treitschke). This is not marshy country, and I have not previously found *Nonagria* represented here at all. Only a few species of *Leucania* occur; and *Tapinostola fulva*, which I took at sugar on August 13th, usually appears, though rather sparingly. On the 12th sugar attracted *Agrotis ypsilon*, *Triphaena fimbria*, *Noctua umbrosa* and *N. dahlia*. The next night *Lygris prunata* appeared somewhat unexpectedly at sugar; I also took *Epione apiciaria* at light. On the 15th *Ennomos fuscantaria* came to the light, and the following night *Calymnia affinis* (scarce this season) to sugar. *Agrotis triuci* appeared at sugar on the 22nd. August 19th was the hottest day of the year, but it proved the swan-song of a great summer. By the end of the month autumn species were making their first appearance: *Xanthia lulea* (28th), *Noctua gluceosa* and *Agrotis saucia* (30th), *Asphalia diluta* (31st). On the 28th a freshly emerged *Spilosoma menthastris* came to the light—an unusual occurrence at a season when the full-fed larva was to be found.

*September–November.*—Early hopes, held out by the hot spell in mid-September, of a good autumn season were quickly dispelled. My weather charts date back to 1908, and I find that 1932 is the only year of the record in which the maximum day temperature failed to reach 60° on any day later than September 18th. Another peculiarity of the October conditions was that, whatever they may have been at other times of the day, they were seldom favourable for collecting during the early hours of the night.

Several species which are ordinarily not uncommon either made a very brief appearance or failed altogether. *Polia chi* appeared on September 4th, and was seen no more. The same with *Eumichtis protea*, which appeared on the 7th. *Ennomos alniaria* came to light on the 4th, and I found only two more specimens later. *Aporophyla lutulenta* (10th) was fairly plentiful for a week, but disappeared after the 18th. *Xanthia gilvago* appeared on the 12th, and I took a few specimens on later dates. I saw nothing of *Xanthia fulvago*. On the 14th I took *Xantholeuca croceago* at sugar. There was a lunar eclipse that night, and it provided an illustration of the effect that light has on sugaring operations. The eclipse, as a spectacle,

was mostly cloud-obscured, but it produced complete darkness, and during that period moths came to sugar in marked contrast to the rather poor attendance of the preceding nights. *Ennomos fuscantaria*, which I had not seen since mid-August, came to light on September 24th and 29th; *Ochria ochracea* appeared on the 25th; *Amathes helvola* (October 6th), *Amathes macilenta* (14th), *Amathes circellaris* (15th), and *Amathes lota* (16th). *A. circellaris* was unusually scarce. Of *A. macilenta* I found only one specimen and of *A. lota* two, but I do not consider either of these species common here. *Amathes lychnidis* was abundant, also *Amathes litura*.

*Brachionycha sphinx*, usually quite plentiful, appeared on October 31st and subsequently, and on November 1st I took *Calocampa vetusta* at sugar. *Plusia gamma* survived the cold October, and I saw a specimen as late as November 3rd.

Bewdley,

Worcestershire.

**COLIAS CROCEUS IN GLAMORGAN, MON.**—During the past two weeks I have seen considerable numbers of *Colias croceus* in the neighbourhood of Porthcawl, Glam. On one occasion I took three in about half an hour in one small hollow among the sandhills, and have seen about a dozen more at different times in the same spot. It is occurring over a wide extent of the sandhills, and occasionally on the beach. I took one female between tide-marks in 'Caswell Bay', in the Gower district. So far I have not detected either *hyale* or *helice*—G. F. CROWTHER; Bettws Newydd, Usk, Mon, August 25th, 1932.

**COLIAS CROCEUS IN THE ISLE OF WIGHT**—Towards the end of last August I saw or heard of about fifteen *Colias croceus* (both sexes), including one var. *helice*. I also secured one male *Colias hyale*. These were in the Isle of Wight, where I also secured one or two *Polyommatus icarus* var. *caerulea* and intermediate varieties.—J. F. D. FRAZER; 2, Pembroke Crescent, W. 11.

**COLIAS CROCEUS IN HANTS AND DORSET**—*Colias croceus* was quite common on the Purbeck Downs at the end of August, and I saw one or two specimens in the New Forest. On August 17th I captured a slightly worn specimen of var. *helice* on the downs near Winchester.—F. A. LEEDS; Gordon House, Bromsgrove School, Worcs.

**LIMENITIS SIBYLLA IN KENT.**—On July 17th, 1931, I discovered here seven males and five females of *Limenitis sibylla*, all in newly bred condition, and so that a brood might be established here I did not take any of them, but released them after close examination. During the autumn and winter I visited the same spot but did not find any larvae, although from the fact that I found eight of this same species last year, four males and four females, on July 16th, 1932, I consider that my object has been accomplished. Again, I released them, in the hope that during the present year there may be many more of the species in the district than otherwise there would have been.—ARTHUR JONES; 17, Sea View Road, Gillingham, Kent.

LARVA OF *APATURA IRIS* FEEDING ON HEATHER!

BY CHARLES NICHOLSON.

IN the issue of the *Western Morning News* of May 28th last the following "Nature Story" riveted my attention:

"The close-set stalks of heather will be in flower ere long. Here and there, if careful search is made, a single stalk is found seemingly in full flower, but having but a single row of florets down one side. Close examination reveals that on the side opposite to the florets white wood shows through the scaly bark. Some time ago one of the caterpillars of the Purple Emperor variety ate away the strip of bark, destroying both leaf and flower buds. Since then the wound has healed, and the sap that would have swelled the full complement of flowers and leaves has overnourished the single row of buds till they have come early into flower.—J.B."

As there was obviously some mistake I replied speedily as follows, my letter appearing on June 2nd:

"SIR,—'J. B.' is under a misapprehension in writing in his 'Nature Story' of the caterpillars of the Purple Emperor (one of our grandest butterflies) as eating the bark of heather. That butterfly is found only in oak woods, and its caterpillars feed mainly on willow, and occasionally on poplar and oak. They would not eat heather, and I expect the damage he refers to was done by the caterpillar of some moth, or possibly, by a mouse." "C. NICHOLSON."

To which "J. B.'s" reply appeared on June 6th, as follows:

"Sir,—Mr. C. Nicholson in his letter on 'Heather and Purple Emperor' is wrong in definitely stating that the larvae would not eat heather. On the particular plant referred to in the 'Nature Story', a larva of *Apatura iris* was found actually removing the strips of bark from the heather stalk, and some years ago I successfully reared in captivity several specimens of *Apatura iris*, using almost entirely heather as a food plant. Undoubtedly this species prefers willow, or oak, or poplar, but it is a mistake to assume that the lists of food plants given in reference books are comprehensive or exclusive." "J. BURGESS."

Recognizing from this that I was in for a tussle, I suggested in my next letter that the larva responsible for the damage was probably that of the Emperor Moth, to which "J. B." replied that as he had already made it clear that he was referring to the Purple Emperor my suggestion was pointless. I need not give the rest of the correspondence (which Mr. Riley has seen), but will summarize it as an effort on my part to get "J. B." to bring forward some evidence in support of his statement by pointing out the most striking feature of the larva and of the imago of *iris*, and persistent refusal

on the part of "J. B." to do anything but stick to his position, and charge me with an unscientific attempt to throw doubt on his statements. The upshot was that the editor closed the correspondence in the issue of August 1st with another evasive letter from "J. B." I decided, however, that the matter could not rest there, and I accordingly paid a visit to Castle-an-dinas on September 12th, where I saw a young fellow about twenty-six, who seemed very intelligent. He told me his father was seriously ill, as the result of a "stroke," and on my asking to see the specimens he told me they had all been destroyed in the fire that burnt out the castle some years ago! We had our chat in the castle doorway and the results of the fire were obvious enough, as the building was a mere shell, and the family had removed to a cottage near. The young man told me that he quite well remembered his father's experiments with various larvae (when he himself was about twelve years old), and that he was interested in trying to rear larvae on strange foodplants. I asked him if he remembered what the *iris* larvae were like, and he described them as green with a sort of horn at one end, and the butterfly as large and beautifully blue. I then showed him the plate from South's *British Butterflies* and he recognized both larva and imago at once, and said that the illustration of the latter was not quite like the butterflies he remembered, as there was a difference in the spots at the anal angle of the hind wing. In the course of conversation it came out that his father had obtained ova from Watkins & Doncaster. This cleared up one question, as I had pointed out in correspondence that while the Emperor Moth is common, the butterfly is extremely scarce in Cornwall, and the only record is open to doubt. I promptly wrote to Watkins & Doncaster for confirmation, but all they could say was that the transaction was probably a cash one, and so long ago that they could not remember or trace it, but it was quite likely that they *had* supplied ova or pupæ of Continental origin. The young man said that they had turned out some of the butterflies, and he had found a wild larva feeding on the heather not far from the castle, which is surrounded by moors. I told him if he found any more to send them to the Rev. A. Thornley, of Carbis Bay, who would be extremely interested to have them. I had taken it for granted that "J. B." was the father, and was surprised, knowing the latter to be so ill, to see some further Nature Stories over those initials in the *Western Morning News*, until on October 1st appeared a notice of the death of Herbert W. Burgess, of Castle-an-Dinas Cottage, aged 58! On my writing to his son offering sympathy and condolence, and pointing out the apparent discrepancy in the initials, he replied that as his "father's writings were fairly extensive, he wrote under different initials to preserve a separateness of subject in his reference notes." The reply, however,



was signed "J. Burgess." Nevertheless I am inclined to believe that the father did get *iris* to feed on heather, and if anyone will send me half-a-dozen fertile eggs of *iris* from any source, I will certainly try to rear them on heather, as I have it in my garden. I admit it sounds a rash venture, but we all know that some of the most exclusive feeders amongst larvae have sometimes astonished their possessor *pro tem*, by accepting some totally unexpected food-plant offered to them in desperation, or on which they found themselves by accident, and rearing from the egg affords the best chance to get larvae to eat something new and strange. By the way, it occurs to me to ask whether *iris* ever has been recorded as feeding on heather, or anything else but sallow, oak or poplar. Anyway the fact that it is not tied to one special food-plant seems to suggest the possibility that its menu might perhaps be extended.

Tresillian, Cornwall ;  
February 8th, 1933.

SPHINX LIGUSTRI TWO YEARS IN PUPA. —With reference to the notes which appeared under this heading in the last volume of the *Entomologist*, I have at the present time three female pupae of *Sphinx ligustri* going over a second winter, having been reared *ab ovo* in 1931 in the course of some experimental breeding. In all, 62 pupae, equally divided between the sexes, but from two different broods, were bred in 1931 ; 24 pupae died and, with the exception of the three females mentioned above (which belonged to one brood), all the remainder produced imagines in June last. I also bred last June a male imago from a larva found wild in 1930, so expect the occurrence is not so rare as has been suggested. Tutt, in his *British Lepidoptera*, 4 : 322, quotes several similar instances and a few cases where even a third winter has been passed by this species in the pupal stage, notably one recorded in this journal, 16 : 234, by Argent—"larvae pupated September, 1880, produced two imagines July, 1883, at Wanstead, the bulk appeared in 1881, the pupae kept throughout in an outhouse."—(N. HAWKINS ; 23, Dalebury Road, S.W. 17.

NEMEOBIUS LUCINA DOUBLE BROODED.—In the January *Entomologist* I notice that Mr. G. B. Oliver has recorded an emergence in December of last year of this species. The January *Entomologist*, 1920, p. 18, contains a record which I sent of an emergence in November, 1919, of a female of *N. lucina* which I had reared from larvae. My friend Mr. A. J. Spiller, after seeing my account, wrote to me stating that "he had had as many as a dozen emerge in November and December in previous years"; so this second brood is not newly known.—ARTHUR JONES ; 17, Sea View Road, Gillingham, Kent, February 17th, 1933.

STILPNOTIA SALICIS IN LONDON.—With reference to the notes on this species (*Entomologist*, 65 : 249, 284 ; 66 : 30), larvae of *S. salicis* were common on poplars in the Zoological Gardens in Regent's Park in June, 1930.—T. BAINBRIGGE FLETCHER.

## ARCTIC ICHNEUMONIDAE.

BY CLAUDE MORLEY, F.Z.S., ETC.

DR. E. A. COCKAYNE has been so good as to seek my determination of an interesting, though unfortunately small, collection of parasitic Hymenoptera made by him on the Murman coast of the Kola Peninsula in Russian Lapland and the neighbouring Yukanski Islands off Svyatoi Nos, well within the Arctic Circle. Our knowledge of these far northern forms is still very incomplete, and especially interesting in showing that wherever insects of any sort occur, there their parasites also extend; further, they are nearly invariably small and obscure, exhibiting none of the brilliant coloration and structural scintillation that gradually become more pronounced thence to the Equator. The earliest record I remember of Arctic Ichneumonidae is among the Description of Insects Collected in Ross's 2nd Voyage to the Arctic, Appendix, 1831 (*cf. Entom. Mag.*, 3 : 427); Fauna Boreali-Americana (noted by me in *Entom.*, 1910, p. 242), followed in 1837. A few Spitzbergen forms are described in *Ent. Mo. Mag.*, 1877, p. 241; but most of them were brought forward by Zetterstedt in his classic *Insecta Lapponica Descripta*, published at Leipsic in 1840, and supplemented at various dates between 1854 and 1889 by Dr. A. E. Holmgren. Perhaps the most unsatisfactory work dealing with this region is W. H. Ashmead's Paper from the Harriman Alaska Expedition:—Hymenoptera: Ichneumonidae (*Proc. Washington Acad. Soc.*, 1902, 4 : 148-241); and, in direct contradistinction, is lastly Dr. A. Roman's careful and peculiarly exact Ichneumoniden aus dem Sarekgebirge (*Nat. Unt. Sarek. Schwedisch-Lappland*, 1909, 3, 4 : 199-374).

Dr. Cockayne's collection includes three species, which are not Ichneumonidae. These are: *Microgaster globatus*, Nees, var. *amentorum*, Ratz (*Ichn. d. Forst.*, 1844, 1 : 68), ♀, said by its author to have been bred from Tortricid moths (BRACONIDAE); *Alysia manducator*, Panz., ♀, a common parasite throughout Europe in dipterous larvae living in decomposing animal matter of all kinds (ALYSIIDAE); and two females of the common British *Amblynotus opacus*, Htg. (*German. Zeits.*, 2 : 202), which has been bred by Giraud (*Ann. Soc. Ent. France*, 1877, p. 416), from, doubtless, dipterous "insectes du *Pinus pumilo*" (CYNIPIDAE).

*Ichneumon vulneratorius*, Zett. (*Ins. Lapp.*, p. 364).—One female found under sand at Murmansk, May 14th, 1917. A well-known subarctic species, extending southward to the tops of English mountains and also recorded by Gaulle from France.

*Phygadeuon fumator*, Grav., var. *borealis*, Roman (1909).—Three females taken on Angelica flowers on Yukanski on August 14th,

1917. The typical form is abundant throughout Europe, but Roman's variety is at present confined to Lapland.

*Attractodes truncator*, Roman (1909).—Much the commonest species met with, pretty certainly always on Angelica flowers, on Yukanski during August 8th and 14th, 1917: on the latter date a male occurred with several females, and this I cannot consider distinct, though both mouth and clypeus are white. The genus is parasitic on Diptera.

*Stenomacrus pusillus*, Zett. (Morl., *Ichn. Brit.*, 1911).—One small female of little more than 2 mm. was taken on Yukanski on August 14th, 1917. The hosts of the Orthocentrids, to which group this species belongs, are still uncertain, though probably Mycetophilid Diptera.

*Tryphon brunniventris*, Grav., var. *connectens*, Roman (1909).—A single male with the whole mouth and trochanters, apical half of face and of the anterior coxae flavous, as also is the underside of scape, was taken on Yukanski on August 8th, 1917, doubtless on Angelica flowers. The genus is supposed to be parasitic on Tenthredinidae.

*Perilissus spilonotus*, Steph. (*Illus. Mand.*, 1835, 7: 227) (= *subcinctus*, Holmgr., 1855).—One female only, this agrees with the type in every respect but the lack of alar areolet, areola nulla. I propose to term it var. **deficiens**, var. nov., since it is convenient to discriminate these northern forms. It was captured on Yukanski Island on August 8th, 1917.

*Limmerium turionum*, Ratz (*Ichn. d. Forst.*, 1844, 1: 93. 1848, 2: 82, ♀).—Known only from the Hartz and Sweden. Thomson (*Opusc. Entom.*, 11: 1105) says "Sällsynt i barrskogar." Bred from *Pinus maritima*, on which it may have been parasitic on *Retinia* sp.

***Asphragis kolae***, sp. nov.—A slender and sublinear species, dull and alutaceously punctate, black with the legs, except basally, subfulvidous, both clypeus and venter obscure stramineous. Head strongly transverse and not narrower than thorax, with prominent eyes. Antennae shorter than body, filiform and immaculate, with all the joints cylindrical. Thorax slender and shortly black-pubescent, with no notauli; speculum dull, metanotum subdeplanate and coriaceous, with a slightly nitidulous linear areola extending from base to the strong subapical transcarina. Scutellum small, coriaceous, a little convex and not laterally margined. Abdomen narrow, deplanate and pubescent, with apical margin of second segment narrowly and the venter pale flavidous: basal segment twice and a half as long as apically broad, subparallel-sided, dull and alutaceous, with subbasal spiracles and its basal three-fourths centrally sulcate; two following segments quadrate, with their apices centrally nitidulous and subelevated; valvulae

large, exerted and piceous. Legs very slender and black with femora, tibiae and tarsi dull fulvidous; tibiae basally paler: hind tarsi and basal half of all the femora infuscate; front femora arcuate, all tarsal claws minute and very closely pectinate. Wings ample and hyaline; radix and tegulae stramineous, stigma and nervures piceous: upper basal nervure antefurcal below and strongly arcuate above: cubital nervure uni- and second recurrent bi-fenestrate: radial cell not narrow; nervellus subopposite and intercepted slightly below centre.

Length,  $5\frac{1}{2}$  mm. ♂ only.

Very unlike and much more slender than any species of *Lampronota*; far duller than the *Himertcsoma*-sp. recorded from Alaska by Ashmead (*Proc. Wash. Ac. Sc.*, 1902, 4: 194, ♂), which is the only other *Lissonotid* with no alar areolet hitherto found in the Arctic region. Much smaller and darker than any of the eight known African representatives of this genus, which was established by Förster (*Verh. pr. Rheuml.* 1868, 25: 166). The generic name has a curious history— all Forster's genera were at first mere typeless names, established exclusively upon palaearctic material: yet *Asphragis* remained without species till 1900, when Ashmead placed his *bilineata* correctly. I have examined the specific type— therein, though it was erroneously relegated to *Lissonota* by Dalla Torre the next year: this was from the West Indies, and remains to this day the only representative of *Asphragis* known outside Africa (the query should be removed from *A. flavidorbitalis*, Cam. [*Entom.*, 1906, p. 18], whereof I have examined the female type). Our new one is the first European species of the genus, and may well be that upon which the name was erected exactly fifty years ago!

The type of *A. kolae* was taken on Angelica flower on Yukanski Island, off the Kola Peninsula of Russian Lapland, on June 9th, 1917, by Dr Cockayne, who has generously placed it in my own collection.

Monks Soham House, Suffolk;

January 20th, 1918 (subsequently mislaid)

DWARF PIERID BUTTERFLIES.—On July 28th, 1929, a very small *Pieris rapae* was captured by me at Hartley, Longfield, N. Kent. It measured only  $1\frac{3}{8}$  in in expanse (as recorded in the *Rochester Naturalist's Journal*), and was presented to the British Museum (Natural History) for inclusion in the British collection. Just recently I have found a second dwarf, which was in a store-box of various British butterflies presented by Alderman Homan of Rochester to the Rochester Museum. This second dwarf was caught by the late Robert Homan, Esq., and measures  $1\frac{1}{8}$  in., being smaller than the first. There is no date or locality given, but it was probably caught in Hants, and before 1932, in the early part of which year Mr. Homan died. —FREDERICK D. WELCH, M.R.C.S., F.Z.S.; Rochester Museum, Kent.

COLLECTING NOTES (LEPIDOPTERA): APRIL TILL  
THE END OF OCTOBER, 1932.

BY C. G. M. DE WORMS, F.E.S.

(Continued from p 51.)

Once more in the south, a good night near Slough on the 27th provided three *Stauropus fagi*, several *Drymonia trimacula*, still fresh. *Thyatira batis*, *Haplotis fasciana*, *Xanthorhoe unangulata*, and many others. On July 1st I motored again to the New Forest. The night proved quite good, and apart from *Hylophila prasinana*, Geometers were the chief visitors to the sheet. These included *Ephyra punctaria*, *E. annulata*, *Cidaria fulvata*, *C. corylata*, *Mesoleuca albicillata* and several of the Boarmids, chiefly *Boarmia roboraria*, and *Cleora lichenaria*. July 2nd was fine and there was plenty on the wing, mainly *Brenthis selene*. On the way to Swanage that afternoon I halted on the Dorset downs. No *Lycaena bellargus* were forthcoming, but I netted several *Parasemia plantaginis* and found a fresh female *Anticlea cucullata*, but could not induce it to lay. That night I tried light on Studland beach. The only species of interest was *Leucania littoralis*. Late on the afternoon of July 3rd, in company with Mr. Archibald Russell, I visited one of the large heaths in the Poole district. In just over half an hour we were fortunate enough to find five *Hyloicus pinastri*, all on isolated Scotch pine trunks, 3 ft. above the ground and facing the wind. Two of these Pine-hawks were rather worn, but I had the very good fortune to find a freshly emerged pair *in cop*. I rather reluctantly sacrificed the female, but managed to obtain about 150 ova. I distributed nearly half of these among friends. All the ova I kept duly hatched, but there was a large mortality among the young larvae, chiefly due apparently to cannibalism. I managed to get about a couple of dozen to maturity by feeding them on red cedar, one of their favourite pabula on the Continent. All duly pupated at the end of August, mostly on the surface, and I am eagerly awaiting their emergence.

Late on July 6th I travelled down to some woods in Essex. As in 1931, *Melitaea athalia* was extremely abundant and in very good condition. I spent the early evening on the salt marshes, where *Herminia cribrumalis* was quite common. On July 9th I was once more in the New Forest. *Dryas paphia* and *Limenitis sybilla* were just appearing. That night near Poole Harbour, with friends, we took one *Coscinia cribrum*, together with *Leucania straminea*, *L. impudens* and *Pachys betularia*. The next day, the 10th, at Swanage, all the summer butterflies were in full swing, including *Melanargia galatea*, *Satyrus semele*, *Lycaena aegon*,

and a solitary *Agriades corydon*. On the way home that night, stopping on a heath on the Berkshire border, I took a nice series of *Lithosia mesomella*. During mid-July both *Argynnis adippe* and *A. aglaia* were very common in the Berkshire woods, but no striking abnormalities were met with.

On July 22nd I paid a further visit to the New Forest. *Dryas paphia* and *Limenitis sybilla* were now well out and in about their average numbers, though f. *valezina* was not in evidence. I proceeded the same evening to Dorset and had a good collecting night again near Poole, taking several more *Coscinna cribrum* and plenty of commoner species. After returning home for a few days I went down again to the Forest on the 27th for a more prolonged stay. The weather, however, was very unpleasant and made day collecting almost impracticable. Night work was much more profitable, and good "bags" were obtained on each occasion. Probably the most frequent visitor to the sheet was *Cleora jubata* (*glabraria*), which came in considerable numbers each night, whereas in some years it is hardly seen. Other better species on three nights, July 27th to 29th, included 1 *Lithosia quadra*, *L. deplana*, plenty of *Mitochrista miniata*, 3 *Laspeyria flexula*, and (♀) *Boarmia abietaria*. On the 31st I motored along the coast to the Sussex Downs, where *Agriades corydon* was flying in great abundance, and during the Bank Holiday week-end some friends and myself obtained some good aberrations. There were also quite a number of *Colias croceus* on the wing, but no f. *helice*. By night round the banks of Traveller's Joy there were a good many *Geometra vernaria*, and *Melanthia procellata*. I returned home for a brief interval on August 1st.

On August 4th, in company with Mr. N. G. Wykes, of Eton College, I set out by car on what proved to be an extremely successful collecting trip. Travelling through the Midlands we reached Formby, in Lancashire, that evening. On arrival we called on Mr. Mansbridge, who very kindly conducted us to some of the best collecting ground on the sandhills. The night proved excellent, especially for light. Soon after dark we had three *Pheosia tremula* on the sheet, while *Agrotis praeceox* and *Leucania littoralis* soon followed. There were any number of common coastal species, but about 12.30 a.m. there began a most remarkable flight of *Notodonta ziczac*. The whole place was buzzing with them, and in about twenty minutes three of us, including Mr. R. C. Crewdson, whom we met, took nearly fifty, all in fresh condition. The following day we spent beating larvae on the sandhills. The small isolated poplars proved extremely productive, shedding any number of *Smerinthus populi* of all sizes, a good many *Pheosia tremula*, *Notodonta camelina*, *Acronycta megacephala*, a few *Cerura furcula*, *C. bifida* and *Acronycta*

*leporina*. The night again turned out first class, this time for ragwort, which was plastered with insects—any number of *Agrotis tritici* of all forms, plenty of *A. nigricans*, very fine forms of *A. vestigialis*, also *Miana literosa*, *Xanthia fulvago*, a few *Agrotis praecox* and *A. cursoria*, and many others. The next day, the 6th, we motored on to Arnside. In spite of cloudy and windy weather we found *Erebia aethiops* (*blandina*), flying in great plenty and in excellent condition. We also took the small form of *Satyrus semele* and the northern type of *Argynnis adippe*. That evening we proceeded to Witherslack, staying at the "Derby Arms". We went out on to Meathop Moss that night, but it proved rather unfruitful, except for a female *Pheosia dictaeoides*. The next morning we spent on the moss, and took a nice series of *Cursus paludata* and a few *Selidosema ericetaria*. Larva beating was again well worth while. Nearly every isolated birch tree produced one or two *Notodonta dromedarius*, together with several *Drepana falcataria* and *D. lucertinaria*. That evening we called on Dr. Lowther in Grange-over-Sands, who kindly gave us a lot of valuable information about the district. The next two nights, the 7th and 8th, we pitched our lights on the high ground overlooking Witherslack Moss. On each occasion we had very good bags, which included several northern species. On the first we had ten *Pheosia dictaeoides* to the sheet between 11 and 1 a.m. Other visitors to light were a good many *Noctua ditrapezium*, a few *Lygris populata*, *Cidaria immanata*, *Malenydris salicata*, *Scotosia dubitata*, and very dark *Hydriomena furcata*. At sugar we took black *Xylophassa monoglypha*, also *Noctua dahlia*, *Orthosia suspecta* and *Cloanthia soludaginis*.

Leaving Witherslack early on the 9th we travelled across the moors, reaching Ilkley about mid-day. On the high ground above the town *Malenydris didymata* was very abundant. On the rock faces there were plenty of *Iarentia caesiata*, which flew off at every turn and were extremely difficult to net. Later that afternoon we proceeded *via* Leeds and Doncaster to Newark, thence across country to King's Lynn, reaching Wroxham on the Norfolk Broads about midnight, after a 280-mile run in the day. We hardly felt like collecting that night, and began operations on the Broads the next morning, the 10th, in ideal weather. Larvae of *Papilio machaon* were fairly numerous, and we also found a few of *Dicranura vinula* and *Arsilbonche albovenosa*. On the wing *Gonopteryx rhamni* and *Vanessa io* were much in evidence. That night we set our pitch on the marshes near Horning Ferry. It turned out to be some of the best collecting I have experienced. At dusk there were swarms of *Mesoleuca bicolorata* flying round the alders. The sugar was packed with all the commoner Noctuidae of the season, including *Triphaena fimbria* and four other species of Yellow Underwing.

Just after midnight we took our first *Leucania brevilinea*, quite fresh, on sugar, and shortly afterwards a *Pelosiella muscerda*. There were new visitors to the patches up till 1 a.m. Our lamp was also equally attractive, four kinds of Prominent coming about midnight—*Pheosia tremula*, *Notodonta ziczac*, *N. dromedarius* and *Pterostoma palpina*. We took three more *Leucania brevilinea*, while *Arctia caja*, *Cosmotriche potatoria* and *Lithosia griseola* together with *f. stramineola* were swarming at light.

(To be concluded )

**ALECTA ADVENA.**—With reference to the note on p. 57 in the *Entomologist* for March, I unearthed a pupa of this species here in Chesham when forking over my rose-bed, a very fine ♀ emerging on June 22nd.—JAMES W. WOOLHOUSE (jun.); Hill House, Frances Street, Chesham, Bucks.

**HETEROCERA IN CO. MAYO.**—Several of Mr. S. B. Hodgson's captures (66-44) in the Belmullet district are of special interest; *Euphyia picata* is only the second example to be recorded from Ireland, the first was taken by Mr. A. W. Stelfox at Arklow, co. Wicklow, in July, 1926, thus shows a wide range, and it must surely occur in intervening localities. *Dyschorista fissipuncta* is one of Birchall's doubtful insects, deleted by Kane from his catalogue of the Lepidoptera of Ireland. *Acronycta megacephala* is rare generally in Ireland, strange that it should turn up in such a bare and wind-swept locality where poplar is almost non-existent. I was in this district in May, 1909, and did a little collecting, males of *Nyssia zonaria* were noted flying in the afternoon on the sandhills near Bingham Castle, and larvae of *Melitaea aurinia* were locally abundant in damp meadows. THOMAS GREER: Milton, co. Tyrone.

**BOARMIA CINCTARIA, SCHIFF., IN SURREY**—On June 16th last, when in company with Dr. E. A. Cockayne, I found a nearly full-grown larva of this species feeding on *Lotus corniculatus* at Chiddingfold. I am not sure whether this is a new record for the county (Surrey is not given in my edition of South's *British Moths*, nor is it in the Victoria History, Surrey, list), but the species has certainly been taken there previously, as both Dr. Cockayne and I were present when a female was found during the evening of May 16th, 1931, at rest on the trunk of an oak in the same locality by our friends Messrs. W. H. Storey and T. Bainbrigge Fletcher. This female laid a large number of fertile ova, which were shared amongst us, but unfortunately the offspring died either as larvae or pupae. The food-plant upon which I found the larva last June also appears to be new, but as South gives *Erica cinerea* (Scorer says *Calluna*) and knot-grass as food-plants in addition to birch and willow, it is possible that when approaching full growth these larvae become fairly general feeders on low-growing plants.—C. N. HAWKINS; 23, Dalebury Road, S.W. 17.



## MORE CORNISH TRICHOPTERA.

BY MARTIN E. MOSELY, F.E.S.

In the November number of the *Entomologist*, 1932, I recorded a short list of Trichoptera collected by Dr. H. A. Baylis and Mr. W. E. China in Cornwall. The publication of this list has resulted in the sending up of another small Cornish collection for determination.

The collector, the Rev. A. Thornley, who is engaged in the working out and recording of the Insect Fauna of Cornwall, has very kindly presented the specimens to the Natural History Museum.

In this collection the genus *Limnophilus* is well represented by seven species, and it is of further interest to note the presence of *Setodes tineiformis* Curt., a species which was exceedingly abundant at Windsor in 1932.

The following is the list of species represented :

## LIMNOPHILIDAE.

- Limnophilus lunatus* Curt.—St. Ives. 20. vi. 1925.  
*L. centralis* Curt.—St. Ives, 12. vii. 1928, 14. viii. 1929, 29. viii. 1929, 4. ix. 1929, 12. ix. 1929.  
*L. vittatus* F.—St. Ives, 12. ix. 1929.  
*L. affinis* Curt.—St. Erth. 8. v. 1928, 13. ix. 1928.  
*L. auricula* Curt.—St. Erth, 12. v. 1927 : Carbis Bay, 19. iv. 1929 ; 23. v. 1930.  
*L. hirsutus* Pict.—Carbis Bay. 24. viii. 1930.  
*L. sparsus* Curt.—Carbis Bay. 30. viii. 1929.  
*Stenophylax permistus* McL.—Carbis Bay, 20. ii. 1931.

## SERICOSTOMATIDAE.

- Sericostoma personatum* Spence.—St. Ives, 16. vii. 1925, 28. vii. 1926 ; Lamorna, 20. viii. 1926 : Lelant Towans, 10. vi. 1929 : Calenick, 3. viii. 1932.

*Crunoccia irrorata* Curt. —Clodgy, St. Ives, 20. vii. 1926.

## BERAEIDAE.

- Berava pullata* Curt.—St. Ives, 3. vi. 1926 ; St. Erth, 12. v. 1927

## LEPTOCERIDAE.

- Setodes tineiformis* Curt.—St. Erth, 9. vii. 1928.

## HYDROPSYCHIDAE.

- Hydropsyche* sp., ♀.—Dunmere, 26. vii. 1929.  
*Diplectrona felix* McL.—St. Ives, 17. v. 1926, 26. iv. 1927.

## PHILOPOTAMIDAE.

*Philopotamus montanus* Don.—St. Ives, 1. vi. 1925.

## POLYCENTROPIDAE.

*Plectrocnemia geniculata* McL.—Carbis Bay, 30. v. 1932.

## RHYACOPHILIDAE.

*Rhyacophila dorsalis* Curt.—Carbis Bay, 22. ix. 1932.

*Agapetus fuscipes* Curt.—Lelant Towans, 24. v. 1929

British Museum (Natural History):  
November 15th, 1932.

FURTHER IMMIGRATION RECORDS.—The following are almost entirely extracted from notes which Capt. T. Dannreuther has kindly forwarded from time to time.

*Pyraus cardui*.—At Limber, Habrough, Grimsby, the only two seen were on August 18th and September 15th (R. May). At Bohnerbreena, co. Dublin, eight were seen in faded condition on May 21st flying steadily to N.W. at about 15 m.p.h., between 3 and 4 p.m. The day was warm with light N.W. wind after a week of easterly winds and sunshine. They were flying over heather on hillside about 1000 ft. up. Two or three were seen on May 14th not far off (C. E. Ellison). In Lincolnshire dozens were seen at Mablethorpe on the evening of June 21st (C. P. Arnold), on August 28th dozens were seen in good condition (F. T. Baker); and on September 7th large numbers (Arthur Smith). At the North Foreland Lighthouse, at Broadstairs, Kent, it was noticed that they always appeared in the afternoon between 2 and 4 p.m., flying West or S.W. generally in light N. or N.E. winds, viz. May 25th (3), May 26th (7), June 1st (2), June 2nd (2), June 13th (3), June 16th (2).

From the Outer Dowsing Light-Vessel, which lies 30 miles off-shore, *Pieris rapae* was reported flying W.S.W. on August 18th, and *Xylophasia monoglypha*, blown off-shore, on July 26th. On August 14th–20th many crane-flies were reported; and on August 6th “a long silver-grey moth with black spots”, going west.

Among the hover-flies reported as plentiful at the Happisburgh Light-Vessel (7 miles off shore), Mr. Claude Morley has identified *Syrphus umbellatarum*.

Not without interest, also, although having little bearing on the problem of migration, is the following list of captures at the Owers Light-Vessel, which lies 7 miles S.S.E. of Selsey Bill: *Abraxas grossulariata* (2), *Cabera exanthemata*, *Tortrix viridana* (4), *Euchloris pustulata*, *Ourapteryx sambucaria*, *Pieris rapae* and two Lacewings.  
—N. D. RILEY.

THE HABITS OF *CATOPTRIA ASPIDISCANA* HÜB. VAR.  
*RUBESCANA* CONSTANT.

By H. C. HUGGINS.

THIS variety of *C. aspidiscana* was first recorded as British from a specimen taken by myself on the saltings in the Sittingbourne district of Kent on June 23rd, 1922. On June 22nd, 1923, I took another example. These two specimens were both males, and, so far as I am aware, were the only British specimens known until this year.

The localities where the specimens were taken were some distance apart, and, as the original locality was difficult to reach, my further unsuccessful searches were all prosecuted in the place where I found the second moth.

Last year I decided to make a systematic search for the moth in the original locality till I succeeded in finding it, with rather striking results.

The typical form of *C. aspidiscana* is fairly generally distributed among Golden Rod in the Faversham district of Kent from, roughly, May 20th to June 7th, so I began my search on the saltings at the end of May, following it up each week-end throughout June. It was not, however, till June 26th that I succeeded in finding a specimen. On this date I dislodged a beautiful female moth, freshly emerged, from some rough herbage about 3 p.m. Unfortunately I had to return early in the day, and till 4.30 I did not succeed in finding another. On July 3rd I returned again to the place and again dislodged a fresh female about 3.30, slightly damaged by being beaten from a dense growth of mixed plants. I did not see any more till 7.30 p.m., when, to my surprise, the males began to fly freely, and, till I was forced to return at 8.15, I saw quite a number, netting over a dozen, of which several, however, were very worn.

Both my original specimens were taken flying between 7.30 and 9 p.m., so that it would appear that it is practically impossible to dislodge the male before 7. I spent the whole of the day on June 26th and July 3rd from 11 a.m. onwards stirring and beating the herbage without result, until in the evening the moths began to appear in exactly the same places I had been working for hours previously.

This method of flight presents a striking contrast to that of the typical *C. aspidiscana*, which may easily be dislodged at any time of the day, and flies freely of its own accord from 3.30 onwards.

Moreover, *C. aspidiscana* is a quiet straightforward flier, buzzing low from one clump of Golden Rod to another in the usual *Catoptria* style, whereas var. *rubescana* dashes madly about, frequently in wild zigzags high over the ground in a way that recalls the flight of *Batodes angustiorana* Haw.

The emergence time is evidently three weeks at least after that of the typical form. The female taken on June 26th and several males and the female of July 3rd were quite fresh; moreover, I was in the locality late in the evening at the two week-ends prior to the 26th and must have seen the moth had it been on the wing. The woodland race in Kent is usually hopelessly worn at the beginning of June, and disappears altogether by the 7th or 8th of that month.

The male *rubescana* when fresh is a bright reddish brown, without markings except for the ocellus, which is obscure. The female, which I have not seen before, is also entirely reddish brown, except for the ocellus, of a somewhat richer tint than that of the male; the basal and dorsal blotch are somewhat darker than the rest of the wings, otherwise she is almost without markings. The average run of the males is at least one-tenth larger than those of the woodlands.

The striking differences both in appearance, emergence time and habits between the two races would have led me to consider var. *rubescana* a good species, but for the fact I can find no structural differences, and that Mr. Pierce has shown that the genitalia are identical.

875, London Road,  
Westcliff-on-Sea

**HAWK-MOTH LARVAE IN VERY HOT SUNSHINE.**—Larvae of *Smerinthus ocellatus* occur regularly each year here, feeding on apple leaves. Finding three on different trees during August last year, I kept watch on them (August 15th to 20th) to see whether they would expose themselves during the exceptional hot weather, temperature 88° or 90° each day in the shade. Experience showed that they all fed on exposed twigs of apple throughout the hottest sunshine at midday, with the sun's rays falling directly on them. One nearly full-fed larva is feeding so as I write, and has been all morning, even resting fully exposed to the midday sun; and another behaved similarly yesterday, August 19th, described as "the hottest day for nearly 21 years." Whether young larvae can stand much hot sun without injurious effects I cannot say, but the above suggests that when two-thirds grown and upwards, continuous hot sun does not affect their health.—FREDERICK D. WELCH, M.R.C.S., F.Z.S.; Hartley, Longfield, Kent, August 20th, 1932.

## A NEW ORIENTAL HISPINE BEETLE.

By S. MAULIK.

THE examples on which the description of the following species is based were sent to me by Dr. L. G. E. Kalshoven, of the Instituut voor Plantenziekten, Buitenzorg, Java. He writes to me that it was this species about which the following remarks have already been published in *Verslagen van de Vergaderingen der Afdeling Ned. O. Indië van de Neder. Entom. Vereeniging*, Deel 1, Nr. 2, July 1st, 1931, p. xxx (appendix to the *Entomologische Berichten*). "Dr. Kalshoven zegten *Hispide* op bamboe te hebben verzameld, die in het blad miniert en vraagt. of de soort bekend is Dr. Leefmans Kent deze soort niet."

***Downesia bambusae* sp. nov.**

Body oblong, parallel-sided, slightly broadening towards the apex. General colour pale yellow, some parts showing signs of turning deeper brown. The pale yellow colour does not seem to be a permanent colour, although in the majority of specimens before me that is the prevalent colour. One example collected under the same conditions is red-brown except the antennæ, metasternum, the abdominal sternites and the middle and hind legs which are black. Apart from the colour there is no difference between the yellow and red-brown varieties. In this genus several species show well-marked distinctions in colour within the limits of the same species.

*Head* with the collar, smooth; interocular area finely punctate, each puncture having a short whitish hair; clypeus convex, sparsely covered with fine, long hairs. Eyes large, convex, but not strongly so. Antenna extending nearly to the base of the prothorax; first segment large and rounded; second also rounded but smaller; third more slender but longer; fourth, fifth and sixth equal to each other; seventh, eighth, ninth and tenth equal to each other, and somewhat thicker than the previous group of three segments; eleventh large and narrowed towards the apex. The whole antenna except the two basal segments is covered with fine and short hairs. *Prothorax* almost as long as broad with a slight constriction in the middle; lateral margins reflexed; anterior lateral angles rounded; a transverse channel along the basal margin, producing a little notch at each posterior lateral corner. Upper surface almost flat, and finely and sparsely punctate, front area free of punctures; some of the punctures are elongate. *Scutellum* small, triangular, with the apex

rounded and with the surface depressed. *Elytra* broader at the base than the base of the prothorax; humerus prominent, rounded; somewhat constricted in the middle. Punctate-striate; on each elytron across the basal area are four rows of punctures, but across the apical area there are eight, each row having doubled itself at about the middle; a scutellar row is absent. The suture is of uniform width and slightly raised throughout. The interval between the first and second initial rows is very broad and flat, and it continues in that condition well into the apical area. The interval between the second and third initial rows is similar to the first. The interval between the third and the marginal rows is that which commences at the humerus, and is strongly raised throughout. The lateral margin is also strongly raised throughout its length. After the duplication of the rows the intervals become somewhat raised; but on the apical area they are narrow and sharply and strongly raised, and the rows of punctures become equidistant from each other. At the point of duplication where two rows anastomose they, the eight rows of punctures, are not equidistant. *Underside* impunctate, shining, almost hairless; at each side on an abdominal sternite is a shallow depression where the surface is wrinkled and the colour darker than that of the surrounding area. Legs robust; the front tarsus larger than either the middle or hind ones, and almost equal in length to the front tibia.

*Length*, 7-8 mm.

*Breadth*, 2 mm.

*Java*: Buitenzorg, 11.1925 (*L. G. E. Kalshoven*).

*Type* in the British Museum. Described from six examples. Larvæ mining in Bamboo-leaves.

The present species resembles *D. gestroi* Baly, but differs from it in having the lateral reflexed margin of the prothorax of the same width throughout (in *gestroi* narrower behind the middle); in having the pronotal surface more strongly punctate (in *gestroi* punctures extremely fine or obsolete); in having the scutellum smaller; in having the first double rows of elytral punctures anastomosing (in *gestroi* they are complete throughout their lengths); in having the intervals between the rows more sharply and strongly raised on the apical area. This species also resembles *D. fulvipennis*, Baly, but differs from it in having the pronotum narrower; in having the lateral reflexed margins of the prothorax narrower (much broader in *fulvipennis*); in having the anterior angles of the prothorax not so rounded as in *fulvipennis*: in having the pronotal punctures larger and sometimes elongate (in *fulvipennis* the punctures are very fine and rounded): in having the second double rows of elytral punctures anastomosing (in *fulvipennis* they are parallel throughout).

The present species is much larger than *Downesia nitida* Uhmann, which also occurs at Buitenzorg.

## NOTES AND OBSERVATIONS.

GREASY INSECTS.—With reference to Mr. G. F. Crowther's note in the January number of the *Entomologist*, I have for some years treated greasy Lepidoptera with petrol and have found it quite satisfactory, using any good grade of petrol, not necessarily aviation. I fill a large-mouthed glass jar with a screw-on metal top about two-thirds full. Pin the insect on to a piece of sheet cork. This should be large enough to prevent the antennae touching the sides of the jar. I then float it upside down in the liquid and keep it there for a few days to a week or more. With large-bodied insects, if the abdomen only is greasy, I break it off and drop it into the jar so that it rests at the bottom and leave it for some weeks. If an insect is taken out too soon, though it appears all right when dried, grease may appear again later on. I have not found that a long immersion damages the wings or affects the colours. I have not tried it with green insects.—H. O. HOLFORD ; Elstead, Surrey.

MUSCICAPA STRIATA, THE SPOTTED FLYCATCHER, CATCHING AND EATING VANESSA URTICAE.—One afternoon in the late summer, whilst in my garden, I watched a flycatcher make many futile attempts to capture *Vanessa urticae*. The bird would perch on a pergola or in an aspen and make rapid swoops at the butterflies coming to and from the blossoms of a *Buddleia variabilis*. There were always about a dozen *V. urticae* and a few *Pieris brassicae* on the blooms, but the flycatcher paid no attention to *P. brassicae*, although it had many chances. I watched for some time and began to think that it never would be successful, when, to my intense surprise, the bird made a rapid swoop to the topmost spray of the *Buddleia*, and when my eyes could pick up the bird again I saw it had a *V. urticae* in its beak. The change of tactics and the more rapid swoop of the flycatcher caused my failure to observe whether the captured insect was actually settled on the blossom or just flying over it. However, I saw clearly that the insect was *V. urticae*. The bird now flew to the roof of the house and could plainly be seen devouring it. It did not return that afternoon, but I saw it on another occasion making attempts to intercept the butterflies on their way to the *Buddleia*, but always unsuccessfully, and it never made another swoop at the blossoms whilst I was watching. It was a hot, still day, so the flycatcher could not have been really hungry, and it seems reasonable to deduce that *V. urticae* is not aposematic like *P. brassicae*. I also noted that every time the flycatcher swooped it made a distinct, clear click, which suggested the snapping of the beak, but I feel sure that the noise was too clear and loud for that, and I presume it must have been made with the wings.—S. T. STIDSTON ; Ashe, Ashburton, S. Devon.

IMMIGRATION NOTES FOR THE EASTBOURNE DISTRICT.—*Pieris brassicae* and *P. rapae*.—The latter was first noted on April 29th, but it was not until more than a month later that *P. brassicae* was seen; neither species was at all common as a first brood. On August 7th *P. rapae* were flying very commonly on the Parade banks and with them there were a fair sprinkling of *P. brassicae*, and on the 8th they were abundant in my garden. In the absence of any report from the Royal Sovereign Light-Ship (seven miles out at sea South-East of the town) or of any critical observations made at the moment, there is no direct evidence of an immigration, but the behaviour of the insects on the 8th, of which careful note was made, seems to point strongly in that direction. My garden is situated at about a quarter of a mile from high-water mark; it is bordered on the north-west by a 9-ft wall, and beyond this a row of elm trees that are at least 30 ft. high grow along the road that runs down that side of the garden; there is open land on the south-east right down to the sea. The butterflies in the garden appeared to be in a restless state, continually fluttering about or momentarily resting at the flowers to feed, but when they encountered the wall, instead of being turned back by it, they fluttered upwards and over it, often three or four at a time, and when they met the elm trees they did likewise, eventually passing over their tops and away in a north-westerly direction; a light westerly breeze was blowing at the time. It seems unlikely that anything but the migrational urge could have caused this north-westerly movement in face of the obstacles mentioned.

*Colias croceus*.—I have no record of this species until July 21st, when a solitary individual was seen flying wildly on the banks along the Parade; on the 30th three or four more, on August 5th another, and on the 9th perhaps half a dozen were noted in the same situation. On the Downs, further inland, a few odd specimens were met with at about the same period. Nothing more was seen of the species until September 9th, when at least half a dozen specimens were flying on the banks along the Parade, and thenceforward a few might be seen on any really fine day until October 19th.

*Pyramis atalanta*.—I have no note of any specimens seen in spring, but from the middle of September until nearly the end of October it was of fairly frequent occurrence. The largest numbers seen at one time were six feeding at Michaelmas daisies in the garden on September 26th, on October 19th, four, and so on. The Royal Sovereign Light-Vessel records one seen and captured on October 4th, going S.W., the wind at the time being N.N.E. light.

*P. cardui*.—A solitary individual was observed flying on the Downs near Beachy Head on May 28th, and another half a mile inland on June 6th. In autumn it was first noted on September 9th, and continued to be met with sparingly until October 6th, three being the largest number seen at any one time—October 3rd.

*Plusia gamma*.—A few specimens came to light between the middle and end of June—little pale grey fellows. From August 2nd until nearly the end of October the species was more or less common,



especially about the end of August and beginning of September, when half a dozen were often taken of a night, and they were practically all fine, large, richly coloured insects, contrasting strongly with the June captures.

*Nomophila noctuella*.—Odd specimens were met with during the latter half of July and again during the first half of September, but at no time did the species appear to be at all common.

*Plutella maculipennis*.—Quite common from June 10th to end of month, less so in July, from 19th, and August, to 22nd; not noted in September, but one taken on October 9th. So small a species may easily be overlooked, but even so, assuming that the June examples were immigrants, it is probable that larger numbers would have been detected later in the season had not some, as yet unexplained, circumstances been unfavourable to their propagation.—ROBERT ADKIN; Eastbourne, November 5th, 1932.

*HALICTUS VIRIDIS* BRULLÉ.—On July 8th, 1931, I found this species at La Laguna, Tenerife, Canary Islands, both sexes visiting the flowers of cultivated sunflower, *Helianthus annuus*. It had been collected at the same place about thirty years ago by F. A. Bellamy, as shown by material in the Hope Museum at Oxford. The female is blue-green, with much white hair on the thorax and legs (as Brullé states); stigma and nervures fuscous; anterior wing about 6.5 mm. long. Brullé did not describe the male, though he said the species was very common. The male has been described by E. Saunders (1904) and E. Strand (1909). It would seem to be variable, or there may be more than one species involved. My male certainly belongs with the female, and has the hair of head and thorax all white, not fulvous-grey above as Saunders indicates. The abdomen above is entirely green, the apical depressions not at all bright blue as given by Saunders. The anterior tibiae are pale rufo-testaceous in front, and the tarsi are mainly of the same colour, whereas Saunders says the legs are entirely black. Thus it is hard to believe that Saunders did not have a different species. Strand's account of the male is brief, but he describes the flagellum as brown beneath, a little lighter than above. In my male it is practically black above and reddish testaceous beneath, this agreeing with Saunders. Saunders suggests the possibility that *H. alcedo* Vachal, 1895, based on a male from Laguna, may be the same species. This might well seem to be the case, but for the fact that Vachal's species is described as being only 5.5 mm. long. Vachal does not say whether the mesothorax is shining; it is so in my insect, though closely punctured; it is described by Saunders as dull. The three localities given by Saunders are all on Tenerife, not very far from La Laguna. Strand cites the species from Santa Cruz, Tenerife, but also from the islands of Hierro and Gomera. Blüthgen (1931) considers *H. unicolor* Brullé (*implicatus* Smith) a variety of *H. viridis*. It is suggested by the above considerations that more material of Canarian *Halictus* should be collected, and the matter is commended to entomologists visiting the islands.—T. D. A. COCKERELL; University of Colorado.

## SOCIETIES.

ENTOMOLOGICAL SOCIETY OF LONDON.—*Wednesday, December 7th, 1932.*—Dr. H. Eltringham, President, in the Chair.—The Secretary read for the second time the nominations of the Council for Officers and Council for 1933.—*Obituary.*—The death of Mr. T. H. Taylor, a Fellow of the Society, was announced.—*Discussion.*—Dr. G. D. Hale Carpenter, on behalf of Prof. E. B. Poulton, F.R.S., who was prevented by illness from attending, opened a discussion on "Protective Adaptations of Animals, Especially Insects", in which Mr. B. P. Uvarov, Dr. R. A. Fisher (a visitor), Mr. H. B. Cott, Mrs. M. D. Brindley, Sir Guy Marshall, Mr. Donisthorpe and Mrs. Hodson (a visitor) took part.—*Papers.*—The following papers were read: (1) A Catalogue of British Braconidae, by G. T. Lyle; (2) The Passalidae of the Belgian Congo, by W. D. Hincks; (3) Studies on Ethiopian Simuliidae, by E. G. Gibbins; (4) On the Types of Oriental Carabidae, by H. E. Andrewes; (5) Collected Records Relating to Insect Migration, III, by C. B. Williams; (6) Attacks of Birds on Butterflies, by G. D. Hale Carpenter; (7) On the Biology of Cero-platinæ, etc., by G. H. Mansbridge; (8) Two-horned Sphingid Larvæ, by E. A. Cockayne and C. N. Hawkins; (9) Two New Malayan Sphecoids, by H. T. Pagden.

*Annual Meeting — Wednesday, January 18th, 1933.*—Dr. H. Eltringham, F.R.S., President, in the Chair.—Dr. S. A. Neave, Secretary, read the names of Fellows nominated as Officers and Council for the ensuing year, and announced that they had been duly elected in accordance with the Bye-Laws. Dr. H. Eltringham, F.R.S., proposed from the Chair, and it was agreed with acclamation, that the Society's congratulations be conveyed to the Secretary, Dr. Neave, on the inclusion of his name in the recent list of New Year's Honours.

The Secretary then read the Report of the Council, which was adopted on the motion of Prof. W. A. F. Balfour-Browne, seconded by Dr. E. A. Cockayne. The Treasurer, Capt. A. F. Hemming, C.B.E., read his report, and this, together with the accounts for the year, was adopted on the motion of Dr. K. Jordan, seconded by Mr. R. W. Lloyd. The President read his address, after which a vote of thanks to him, coupled with the request that the Address might be published in the Proceedings, was moved by Prof. E. B. Poulton, F.R.S., seconded by Mr. H. Willoughby Ellis, and carried unanimously. A vote of thanks to the Officers for their services was passed on the motion of Sir Thomas Hudson Beare, seconded by Mr. R. W. Lloyd, and carried unanimously. Dr. S. A. Neave and Capt. A. F. Hemming briefly replied.—S. A. NEAVE, *Hon. Sec.*

## OBITUARY.

## ALAN DRUITT.

Mr. Alan Drutt, of "Willow Lodge", Christchurch, died suddenly at his residence on February 9th, 1933. He was the fourth son of Mr. James Drutt, a well-known Christchurch solicitor and was born on July 20th, 1863, and educated at Wimborne Grammar School. He married on October 18th, 1900, Miss Elizabeth Galbraith Clarke, the daughter of Thomas Clarke, of Allerton Hall, Liverpool. There is no issue of the marriage; his widow survives him.

Mr. Drutt was admitted as a solicitor, in 1890, and for many years held public appointments in his native borough.

He was very closely connected with the administration of the affairs of the beautiful old Priory Church at Christchurch, and was largely instrumental in saving from alteration a beautiful garden and an old house known as "Church Hatch" lying between the Priory and the Castle. He became a Trustee of Church Hatch Charity, which was founded for the purpose of saving this building and thus preserving the amenities of the Priory. He was the joint author of *The Rating and Assessment Manual* (1901)—Maude and Drutt.

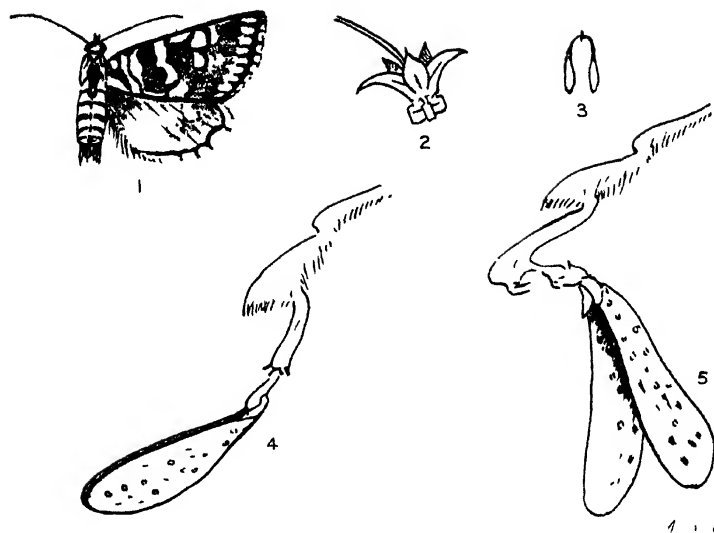
Notwithstanding these activities and a keen love of gardening (being a Vice-President of the South Avon and Stour Agricultural Society), and in spite of the severe handicap of the loss of a leg through tubercular trouble in a bone in early life, Mr. Drutt amassed a considerable collection of the British Lepidoptera and a number of exotics, the latter mainly collected by him on the occasion of a trip up the River Amazon. He was particularly interested in the Lycaenidae and in the Irish fauna. His collection he bequeathed to his wife. In addition to the Lepidoptera many other groups attracted him, and he was a most successful breeder of larvae.

He was a member of the Bournemouth Natural Science Society, and was at the time of his death President of the Entomological Section of that body.

He was elected a Fellow of the Entomological Society of London in 1924. In 1921 he joined the then newly founded Hampshire Entomological Club, being one of the first twelve members, and his ready assistance has been a great factor in conducing to the expansion of that Club into the now flourishing Entomological Society of the South of England. He served it as President in 1928 and 1932, and also as a Vice-President, Councillor and Trustee. On January 28th, 1933, he presided at the Annual General Meeting, delivered his Presidential address, and was to all appearances in good health. The news of his death, which was due to thrombosis, was a painful shock to all those who knew him, and to whom he was endeared by an old-world courtesy and charm of personality which is all too rare.

—W. P. C.





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For explanation of figures 1-5 see Murray, p 104;  
figs. 6-7, see Adkin, p 97; figs 8-9, see Wakely, p. 99

# THE ENTOMOLOGIST.

VOL. LXVI.]

MAY, 1933.

[No. 840]

## AN APPARENTLY UNRECORDED PUPAL HABIT OF *EUCOSMA SEMIFUSCANA*, STEPH.

BY ROBERT ADKIN, F.E.S.

(Plate I, figs. 6, 7.)

ABOUT a year ago, among some odds and ends that my friend, Mr. A. L. Rayward, had taken on the borders of the marshes near the town, we detected a specimen of *Eucosma semifuscana*, Steph. Fortunately he remembered the exact spot where he had taken it, and, as the species had not previously been recorded for the neighbourhood, acting on the principle that where there is one of a species of this sort there are likely to be more, we determined to make a search for the larva. On the first attempt, on May 28th, a few larvæ that appeared to answer the description of this species were found, but they were small, and nothing came of the half dozen that we brought home. On June 17th we made a further search, and found the larvæ had grown considerably and appeared to be nearly, if not quite, full-fed, so we each took about a score of them.

Just at this time the weather was warm and dry, so with a view to keeping the willow shoots, in which the larvae were feeding, fresh I put a little moist sand in the bottom of the pan in which they were kept. As no moths had appeared by the middle of August I thought it well to investigate matters, and on carefully opening the willow shoots, expecting to find either pupae or dead larvae in them, I was disappointed at finding them all empty, but on lifting one of the lowest I was surprised to find a tough, sand-covered cocoon adhering to one of the leaves (see fig. 7). Two or three were found attached to leaves that had lain upon the surface of the sand, but the majority were embedded in the loose surface of the sand itself (see fig. 6). Mr. Rayward tells me that he put his larvae into an ordinary breeding-cage with earth in the bottom, and that they all left the willow shoots and made earthen cocoons. The cocoons are tough silken structures into which the grains of sand or particles of earth are securely woven.

When Stephens (1834) described and named this species he erected the genus *Poecilochroma* to take it, with *solandriana*, L., *ophthalmicana*, Hb., and four other species and forms which do not at the moment concern us.

Wilkinson (1859) adopted Treitschke's generic name *Paedisca*

for these species and added *sordidana*, Hb.; thus we find these four species placed in a genus by themselves, viz. :

*semifusca*, Steph.—*piceana*, Haw.

*sordidana*, Hb.—*stabilana*, Steph.

*solandriana*, L.—*sinuana*, Hb.

*ophthalmicana*, Hb.—*maculana*, Steph.

Barrett (1907) follows Wilkinson's arrangement, but more recent authors place these four species in much larger genera; thus Kennel (1921) uses the generic name *Epiblema*, Hb., for these and over a hundred other species, not all of which, however, are found in Britain, and Meyrick includes these four with some fifty odd other species in the genus *Eucosma*, Hb.

Regarding the pupal habits of these four species, *solandriana* is the only one of the four mentioned by Wilkinson, who tells us that the pupa "is enclosed in a silken cocoon spun up in moss, etc." Barrett says of *ophthalmicana*, "pupa light brown, in a cocoon of earth and silk in the ground"; and of *solandriana*, "pupa yellow-brown; in a cocoon in the earth". His suggestion that the pupa of *semifusca* is "spun up among dead leaves of willow" is altogether at variance with my experience, and of *sordidana* "pupating among rubbish on the ground", hardly seems to agree with the late Eustace Bankes's experience as related in the *Ent. Mo. Mag.* for 1906, p. 101, which clearly indicates that had the larvae had the chance to make their cocoons in the earth, they would have done so.

It therefore appears, from such evidence as I have been able to collect, that these four species that Wilkinson placed by themselves in one genus have the somewhat unusual habit for leaf-feeding Tortricidae of making earthen cocoons for pupation, and it may be that when we come to know the habits of the various species more fully than we do at present, we shall find that he was not far wrong in thus isolating them from their fellows.

Hodeslea,

Eastbourne;

November, 1932.

CIDARIA PICATA IN IRELAND.—In the *Entomologist* (April, 1933, 66: 85), I notice the comment of Mr. T. Greer on the occurrence of *Cidaria* (sub-genus *Euphyia*) *picata*, Hüb., in the counties Wicklow and Mayo. Besides these two localities I have to add that of co. Cork. The first was taken in 1929 by my nephew near Bandon, and seen by Mr. Dudley Westropp; the second in the same year at Ummera by my sister, Mrs. G. E. Lucas. Since then over a dozen have been sent me by her. I have fourteen specimens in my collection from the latter place.—C. DONOVAN (Lt.-Col. I.M.S., ret.); Bourton-on-the-Water, Gloucester, April 4th, 1933.

## APHOMIA GULARIS (ZELLER) IN BRITAIN.

BY S. WAKELY.

(Plate I, figs. 8, 9.)

THIS species of *Galleriadae*, which might become a serious pest at docks and in warehouses, originates from Eastern Asia. A specimen was taken by myself in the street at Finsbury, London, last July (*Entom.*, October, 1932, p. 229), and on December 21st a living specimen of the same species was brought round to me by a friend, who had taken it flying indoors at Upper Norwood, London. I have no doubt this specimen emerged from a pupa in a warm cupboard, where my friend tells me he often keeps pea-nuts for feeding the birds. This moth was smaller than the one taken in the summer, and so different in colour and markings that I was in doubt about it being the same species. On taking it to the British Museum, Mr. West at once pronounced it a specimen of *Aphomia gularis*. He told me another specimen had been sent to the Museum for identification some weeks previously, taken in the New Forest district. No doubt there will be further records of it for England this year, and the following particulars might be of interest :

The earliest record of *A. gularis* for Europe was in 1908.

The species was recorded as first noticed in America in 1919. The larvae were found in numbers in sacks of shelled pea-nuts which had arrived in California from China.

There is a note in the *Ent. Mo. Mag.* for August, 1922, p. 191, of its occurrence the year before in England, a cargo of walnuts from Marseilles being found infested with the larvae at the London docks. It was observed that the larvae bored holes in the wood of the packing-cases and formed a cocoon therein for pupation. Imagines were also bred at Bournville and specimens sent to the British Museum. This seems to be the first record of its appearance in Britain.

A further record of the species is published in the March number of the *Ent. Mo. Mag.* for 1931, p. 59. This time the larvae were feeding on Algerian almonds at London docks.

It would be of great interest to know if *A. gularis* has produced, or is able to produce, a second generation in Britain.

My thanks are due to Mr. West, of the Museum, for naming this species for me ; and also to Mr. E. E. Syms for the photographs taken by him and reproduced here.

The larger specimen (Plate I, fig. 9) is typical, but the smaller one (fig. 8) is apparently a stunted example, and is the one taken in December.



PARANEUROPTERA IN HASTINGS DISTRICT, ETC., IN  
1932.

BY H. G. ATTLEE.

My first dragonfly was a *Pyrrhosoma nymphula* Sulz. on April 30th, while two or three naiad-skins on the same date show that some had flown earlier.

On May 14th, at the same small pool, a naiad-skin of *Brachytron pratense* Müll. was found: and next day two of this species, a male and a female, were found, by their naiads, at a near-by pond; by 11 a.m. both had flown. *P. nymphula* now common.

May 19th: *Agrion puella* Linn., a teneral female, and a mature male with the prothorax much more strongly curved in posterior outline than usual, though otherwise typical. I made no early search for *Agrion pulchellum* Lind. here, since I mistook this to be one; late in June I took two typical males of *pulchellum*, about half-a-mile apart, at small clear streams on the marsh near-by.

May 20th: A visit to the Surrey haunt of *Ischnura pumilio* Charp. produced a nice female var. *aurantiaca*: no *nymphula*, *puella*, etc., were seen at the pool, though the former occurred not far off, which suggests that *pumilio* is one of our very early species. At Hastings typical *Ischnura elegans* Lind. was seen on May 21st, var. *infuscans* on May 25th.

At Byfleet, on May 30th, two pairs of *A. pulchellum* were seen, and also a female ovipositing. Along some two miles I saw but two teneral females of *A. puella*, which at Hastings was common then; two specimens of *Cordulia aenea* Linn. turned up; a single female *Calopteryx splendens* Harr. On Horsell Common single rather immature females of *Enallagma cyathigerum* Charp. and *Libellula quadrimaculata* Linn. turned up.

At Crowhurst (Hastings) *Calopteryx virgo* Linn. was first seen, May 31st; next day several appeared, and single females of *Libellula depressa* Linn. (teneral) and *L. quadrimaculata*; *P. nymphula* in pairs and abundant.

The first week in June in Surrey found *I. elegans* (all forms) and *A. puella* abundant, in pairs; *Erythromma najas* Hans. was first identified June 3rd, a mature male, but had probably appeared before, at Byfleet. At the same locality, on June 5th, an early date, a splendid female *Somatochlora metallica* Lind. was found in grass at the canal edge close to its naiad-skin; it measured  $58\frac{3}{4} \times 81$  mm.

On June 8th *I. pumilio* was the most noticeable species in its haunt (Surrey), some twenty males and as many *aurantiaca*

females being seen, with one typical female. A day later, when they were pairing on the rushes, three of the latter were seen. The 9th and, to less extent, the 8th segments in the males vary greatly in development of dark marking.

June 10th: *Anax imperator* Leach was noted at Richmond just out, hanging vertically backwards; it had flown twenty-four hours later: two others had emerged a day or so earlier.

On commons near Milford, June 12th, *E. cyathigerum* was swarming and *L. quadrimaculata* common, but *C. aenea* scarce. I saw my first *Cordulegaster annulatus* Latr., hawking low over heather, and later another, high round the 25-ft. birch-tree tops, also a teneral *Orthetrum coerulescens* Fabr. on the heath, but *Pyrhosoma tenellum* Vill. was not noted, though at Brockenhurst next day one mature female and three "tenerals" (one male) were out.

June 14th: *Platynemis pennipes* Pall. (first seen June 8th) was met with in pairs ovipositing on pond-weeds, etc., at Byfleet in plenty; and a *B. pratense* was noted repeatedly dropping actually on to the water whilst hawking round a limited area after midges late in the evening. *L. depressa* and *L. quadrimaculata* were ovipositing (Richmond).

June 17th-18th: At Brockenhurst again; fifteen or sixteen species were seen, including *Agrion mercuriale* Charp. (whose haunt I missed previously), a good few and one pair: *I. pumilio*, a male with segment 9 heavily marked: *P. tenellum*, some half dozen, mostly teneral; *O. coerulescens*, numerous, several blue males, and one female ovipositing in a bog-hole. *A. imperator*, one male; *C. aenea*, one male caught (possibly more seen): *C. annulatus*, four or five; and *Gomphus vulgatissimus*, Linn. Of the last the first seen pitched on floating weed at the edge of a rapid-running bend of the stream as if ovipositing, but proved to be a male, and another constantly rested on a water-lily for five minutes or more; later I took the latter on a low may-bush eating a male *P. nymphula* head first. In passing it is of interest to note that *G. vulgatissimus*, when taken, always bit (or tried to) incessantly. I have noted a female *C. annulatus* similarly once bite me on release before taking wing, and this year a male did so as I was shifting it in my hand, and it held on so that I inadvertently half pulled the head off. I saw only some four each of *I. elegans* and *E. cyathigerum* here.

June 21: Noted *C. aenea* hawking till 7.10 p.m. (S.T.), and a female *B. pratense* ovipositing on bank at Byfleet an inch above the water, on reeds, and on floating leaves in mid-canal, as *A. imperator* does.

At Hastings, during late June, *A. imperator* was fairly common, and at Battle too; *C. aenea* and *B. pratense* occur at both these places,

and the latter at Ashburnham. *Aeschna grandis* Linn. had left a naiad-case in Richmond Park by July 5th; at Hastings by July 9th; *Sympetrum sanguineum* Müll. females just out by July 10th; and *Aeschna cyanea* Müll. strong on wing, July 11th, Hastings.

Of *Sympetrum scoticum* Don. a yellow individual was seen at Esher Common, July 13th.

July 14th–18th: At Hickling, where I found *Aeschna isosceles* Müll. in fair numbers and condition, and, despite dull and windy weather, much on wing; several behind three birch trees hawking throughout a stormy day, settling for short rests in the rushes, where they were very difficult to mark. Others, working in slow, steady manner (like *imperator*, but at times practically stationary, I think), were extremely wary, so that (though I early took a female) my attempts on males were vain till I got one at rest on a bramble at 6.30 p.m. on the 17th. Also seen: *Orthetrum cancellatum* Linn., still common, often settling on paths (when the colour of the female is very protective); *B. pratense*, one fine and perfect female, July 14th; *L. quadrimaculata*, several, worn, easily taken and replaced on rushes during the gale; *Lestes sponsa* Hans. abundant; *Sympetrum striolatum* Charp., several teneral specimens on July 14th; and, on that date, what I took to be a male *Aeschna juncea* Linn.

Of *Libellula fulva* Müll. I took a rather worn female, with the dorsal region considerably blue-shaded; the only certainly identified male (resting on a reed) escaped me. Close to it what was evidently a very blue female was ovipositing in a peaty runnel about 1½ in. deep, striking rapidly at spots a few inches apart.

In Surrey I saw *C. aenea* still on July 31st. At Thursley the dark forms of the females of *P. nymphula* and *P. tenellum* were taken, and here, on September 4th, a pair of *Ae. juncea*, while drifting to and fro at some height above the heath, were taken by a hobby; on this date two male *P. tenellum* and several *O. coerulescens* were still on wing.

During August Eridge Park produced sixteen species, including *S. metallica* (several) and *Aeschna mixta* Latr. (one on August 11th). The latter was seen at Hastings, where it was quite common later, August 12th; probably at Thursley, August 7th.

At Eridge on August 19th three females of *C. annulatus* were in turn ovipositing in a tiny runnel about ½ in. deep; one was noted scarcely shifting her position during some two minutes, striking the water meanwhile at the rate of nearly twice per second. One was very imperfect; another, a grand specimen, measured over 88 × 107 mm.—a length well above that given in *British Dragonflies*. (I may here add that of *A. imperator* I have males from Richmond and Hastings measuring fully 81 × 107 and 79 × 109 mm.—also exceeding the book's figures.)

After vain search for *C. annulatus* near Hastings earlier in the season I was pleased to see one or two males in September, as it has very few records here. The hot late summer protracted the season—some last dates were *C. splendens* (Hastings), August 10th; *L. quadrimaculata* (Eridge), August 11th; *L. depressa* (Hastings), August 20th; *E. naias*, August 19th; *S. metallica*, August 21st; *P. nymphula* and *A. puella*, August 25th (all Eridge); *A. imperator*, August 29th; *E. cyathigerum*, September 10th; *C. annulatus*, September 14th; *I. elegans*, September 20th (all Hastings). Dull and cold weather caused last dates for other species to be earlier than in some years; I last saw *L. sponsa* and *Ae. grandis* on October 1st, nor did I see *Ae. mixta* after that date—these at Thursley. A single male *Ae. juncea* there was hawking very low, and for a short time only, over a bog, October 12th.

In Richmond Park two male *S. scoticum* and a male *Ae. cyanea* were seen on October 19th. On the 15th a female *cyanea* was observed ovipositing on a stump 9 in. above the water-line; I examined and replaced her without rousing her to more than a feeble wing-fluttering ere resuming her occupation.

Several *S. striolatum*, including at least one pair ovipositing, were seen in the Park, October 26th. I should add that between Hastings and Crowhurst at least three (probably more) males of *Sympetrum flaveolum* Linn. were seen on September 12th, 14th and 15th, just after a great S.W. gale. Of two which I took one was distinctly worn, the other perfect.

9, Florence Road,  
Sanderstead,  
Surrey.

**BOARMIA CINCTARIA.**—It may be of some interest to record that in July, 1891, I beat some half-dozen green Geometer larvae from either sallow or alder buckthorn on a heath in the New Forest. I did not recognize the larvae, and was agreeably surprised when 2 ♂ and 2 ♀ *cinctaria*, quite pleasantly varied in colour and pattern, emerged in April, 1892. They are still in my collection. I was not so careful about recording details in those days as I am now, but I am certain the larvae did not come off birch, because to the best of my recollection there were no birches near, but there were some young Scots pines and plenty of heath, and the moths would no doubt have rested on the pine trunks had I not prevented them.—C. NICHOLSON; Tresillian, Truro, Cornwall, April 5th, 1933.

**CATOCALA FRAXINI IN THE ISLE OF WIGHT.**—About September 11th, 1932, I took at sugar near Binstead, I. of W., a specimen of *C. fraxini*. It was in good condition except for a chip in the lower wing.—C. J. S. ANDREAE; Mr. Whitfield's House, The Schools, Shrewsbury.

*PAIS FESTIVA* JORD. (LEP. AGARISTIDAE) POLLINATING ASCLEPIADACEAE.

BY D. P. MURRAY.

(Plate I, figs. 1-5.)

THAT moths were responsible for the pollination of certain Asclepiadaceae was known over a hundred years ago, Robert Brown having published several papers on the botanical aspect of the subject between the years 1809 and 1831. As entomological literature appears to contain no reference to the subject, however, the following observations may be worth putting on record.

A short time ago my attention was attracted by a day-flying moth, in the neighbourhood of Boksburg, Transvaal, S. Africa. This insect, *Pais festiva* Jord. (Agaristidae), is a fairly common moth on the open veld. At first glance it looks very like a small "Fritillary", being light brown in colour with yellowish and black markings. On examining the insect I found that the hind feet were elongated in a way that I had never before noticed among moths. I thought at first that this was some abnormal growth, but closer examination, however, disclosed the fact that the foot was nothing of the kind, but the pollen mass of one of the Asclepiads.

In the flowers of this group the pollen-grains, as in the Orchidaceae, are united in masses joined to a single gland. Around the stigma are usually five dark brown or yellow glands, to which the pollinia are attached. If the fine point of a needle be placed under the glands, the pollinia can be withdrawn. The glands are between the stamens, and the pollen masses on either side come from the halves of two adjacent anthers. When the moth alights upon the flower the foot acts as if a needle were inserted. The claw of the foot pulls out the pollinia, which hang upon it, looking somewhat like a tiny pair of scales, 2 mm. in length. When the moth visits other flowers the pollen-mass adheres to the sticky centre of the flower and so pollination is effected.

Subsequent examination of other moths revealed many with these same pollen-masses attached to them.

Brakpan,  
Transvaal,  
S. Africa.

POLYGONIA C-ALBUM IN SUSSEX.—This afternoon, whilst on a ramble near here, I observed at rest upon a hedgerow an insect, which, upon closer examination, proved to be a hibernated specimen of *Polygonia c-album*.—HORACE G. ACHARD; Oakwood, Roman Road, Southwick, Sussex, March 11th, 1933.

COLLECTING NOTES (LEPIDOPTERA): APRIL TILL  
THE END OF OCTOBER, 1932.

BY C. G. M. DE WORMS, F.E.S.

(Concluded from p 85.)

The next day, the 11th, we motored to Barton Broad. There we met Mr. Gane, who very kindly conducted us round the area. We spent the morning on the Broad searching for pupae of *Nonagria cannae* in *Scirpus* mingled with lesser reed mace. We found a dozen in about an hour. The same evening we accompanied Mr. Gane to his special collecting-ground, and again the sugar proved excellent. Soon after dusk insects arrived in numbers, particularly *Calymna trapezina*, which displayed remarkable variety. It happened to be a very good season for *Pelosia muscerda*, Mr. Gane having seen several hundred on sugar on some of the previous nights. We were not to be disappointed, as nearly every patch had two or three of this local species on it and we were able to reap a good harvest. Other less common moths included *Hadena haworthi* and *Apamea ophiogramma*. Among the visitors to light was *Cerura furcula*, and on the way home we took one *Nonagria cannae*. The next day, the 12th, we were again in the Barton Broad area. This time Mr. Gane kindly conducted us to a marshy meadow in search of larvae of *Spilosoma urticae*. We were fortunate in finding some thirty of these in about an hour. The larvae varied from full-fed to half-grown, and were mainly to be found hiding in the long grass in the neighbourhood of beds of pennywort. They were extremely active, and if once dropped could make off almost as fast as mice. Larvae of *Papilio machaon* were very plentiful in the area we visited. Almost every carrot plant harboured one. The same night the sugar was again very well frequented with the same species as before. We also found one or two larvae of *Palimpsestis octogesima* on the small aspens. Later on that night we motored to the sandhills near Eccles, where the Marram heads were fairly well patronised by common species. *Leucania littoralis* was still quite fresh, but *Tapinostola elymi* was nearly over. We were surprised to find a few *Pelosia muscerda* in this locality. On the morning of the 13th we set out for home, making our first halt in the Breck sand district, where we swept a few larvae of *Anticlea cucullata* off bedstraw, and found plenty of the *Silene otites* heads riddled by the larvae of *Dianthoecia irregularis*. At the Fleam Dyke *Agriades corydon* and *Satyrus semele* were flying in great abundance.

August 14th we spent on the Sussex Downs, where *Agriades corydon* was at its height, and we were again lucky enough to take

some good vars. On this occasion *Colias croceus* was still fairly numerous.

I set out on my next venture on the 19th, the hottest day of the year and of the century. My objective was once more the Sussex Downs, but on arrival I found that over 95° in the shade was rather excessive for pursuing *Agriades corydon*, and I spent the rest of the day in the sea. In spite of a clear moonlit sky, moths were very active that sultry night. On some marshy ground *Cosmotriche potatoria* was very plentiful. Other visitors to the car headlights were *Phragmatobia fuliginosa*, *Hydroecia paludis* and *Nonagria geminipuncta*. After spending the next morning on the downs I proceeded later in the day along the coast to join friends at Dungeness. The night was again very promising, and we finished up with a good "bag" at our lights. Shortly after dusk there was quite a rush of *Lasiocampa trifolii*. I took one *Hydrelia uncula* which was new to the locality, and there were the usual number of *Xanthorhoe galiata* and *Aspilates ochrearia*. I reached Folkestone in the early hours of August 21st, and made it my headquarters for the next ten days. By day my time was mainly spent searching for varieties of *Lycaena bellargus*, which was in great abundance for about three weeks from this date. It was probably the best season for at least ten years and some remarkable aberrations of both sexes were obtained, though none of the "plums" found their way into my net. However, I was able to accumulate a fine variable series. The most frequent variety was the elongation of the spots on the lower side of the fore wings. In many cases these were extended to finger-like markings.

The nights were on the whole unfavourable for collecting. On the 22nd I accompanied Mr. A. M. Morley to some of the mid-Kent woods, where, by searching the golden-rod heads with torches, we secured a couple of dozen larvae of *Cucullia asteris* in quite a short time. We also took a few *Eupithaecia expallidata* flying over the golden-rod. The next night sugar was fairly attractive at Dungeness to many common species, chiefly *Agrotis saucia* and *A. ypsilon*. In Romney Marsh on the 28th we took a couple of *Plusia festucae* over ragwort. I left Folkestone on August 31st and returned home. The week-end of September 3rd I spent in Sussex, where *Agriades corydon* was still much in evidence. I was again at Folkestone on the 10th. *Lycaena bellargus* was nearly over, but still in good numbers. In some of the Kent woods that night we took quite a number of things at sugar, including several fresh *Asphalia diluta*. On a few warm nights in the middle of the month there was some very good collecting. On the 13th, near Esher, the Sallow family was very much to the fore. There were any amount of *Xanthia fulvago* and *X. lutea* on the grass-stems, together with several

*Noctua glareosa*. Sugaring round some lime-trees attracted quite a few *Xanthia citrigo*, while *Amathes litura* was much in evidence.

Late on the afternoon of the 14th I travelled down to some of the marshes bordering Canvey Island. It was very fine, and the heads of the sea aster were abounding with *Vanessa urticae*, no doubt a second emergence, but I did not obtain any abnormal forms. After careful searching of the sea *Artemisia* I found a couple of larvae of *Euchloris smaragdaria* on a small bunch of the plant. When once I had got my eye in I had no difficulty in finding them with comparative ease, and I came away with two dozen in just over an hour.

On September 16th I went to Hereford to stay with friends. Night collecting was unproductive, but by day there was still a good deal on the wing, chiefly *Polygonia c-album*, *Vanessa io* and *Pyrameis atalanta*. The next week-end, the 24th, I travelled down once more to Swanage. Sugaring was quite profitable, and attracted any number of the commoner autumn moths: the better species included a few *Aporophyla australis* and *Calocampa vetusta*, while at light there were several *Epunda lichenea*. During the last weeks of September both *Mellinia gilvago* and *Polia flavicincta* were almost nightly at sugar in the grounds here, together with a large representation of the Chestnut family.

On October 2nd I motored to Arundel in search of *Xanthia aurago*, without any success, but I beat one *Lithophane socia* from ivy on the way back. Sugaring locally near here on October 8th and 9th produced a good number of the autumnal species, plenty of *Misela oxyacanthae*, *Amathes lota*, *A. macilenta* and *Eupsilia satellitia*. The only species new to the locality was *Aporophyla nigra*, a solitary female of which turned up on the patches. On the 14th I took one *Orrhodia rubiginea* on ivy in the garden here, and on the previous night a *Lithophane semibrunnea*. I ran down to the New Forest on the 15th for *Agriopsis aprilina*, but had a blank night. However, several of this species turned up at sugar here a few nights later. I again visited Swanage from the 21st to the 23rd and once more reaped a fairly good harvest. This time *Calocampa vetusta* was much more numerous, while *Epunda lichenea* was still the chief visitor to light and mostly in good condition. I spent the last week-end of the period at Cambridge, and motored over to the Huntingdon wood on the 29th for *Brachionycha sphinx (cassinea)*, but drew a blank, except for a few *Himera pennaria*.

To sum up, the year 1932, after a bad start, turned out extremely good for collecting from June onwards, and so far as weather was concerned it was one of the best summers for many years. Butterflies were patchy. In most cases they kept up to the mark in numbers, and in a few instances, such as *Agrindes corydon* and *Lycæna*



*bellargus*, they far exceeded the average. The chief absentees were *Cyaniris argiolus* and *Zephyrus quercus*. Whereas in 1931 the larvae of the latter species were in swarms, it was hard to beat one in 1932. It was also a good season for certain migrants, mainly among some of the rarer species of moths, such as *Acherontia atropos* and *Leucania vitellina*. Plenty of larvae of the former and imagines of the latter appeared in the autumn, doubtless from immigrant females in the spring. Among the butterflies *Colias croceus* and *Pyrameis cardui* maintained moderate numbers throughout the late summer.

Milton Park,  
Egham, Surrey ;  
November 12th, 1932.

EVANESSA ANTIOPA AT GOODWOOD.—I believe authentic instances of this insect having hibernated successfully with us are few, and it may therefore be of interest to put on record the following :

On March 26th, a day of brilliant sunshine, with a shade temperature of 60° at Goodwood I saw an example of this insect, which flew past me quite leisurely in a ride, and from the clear view which I obtained of it, it appeared to be in perfect condition. Being late in the afternoon, about 4 o'clock, it was flying low, albeit in bright sunshine, only just over the undergrowth, and appeared to be searching for a suitable spot in which to pass the night. At a distance of about 10 yards ahead of me it turned sharply up a cross-ride and was lost to view. I am inclined to think that it settled in a tangle of bracken at this spot, but I could not put it up again. The wing borders were quite white—as white as the markings of *Limenitis sibylla* in flight.

In the summer of 1930 I understand that a large number of these insects were liberated in the neighbourhood of Aldingbourne, but I have yet to meet with anyone who has seen any trace of the insect since. It can hardly be that the insect I saw was a survivor of this introduction, since were this so it points to the fact of two successive broods having been reared in the neighbourhood since 1930. This seems unlikely, since in this event it could hardly have escaped notice.—STANLEY MORRIS; Ranscombe, Stirling Road, Chichester.

EARLY EMERGENCE OF MIMAS TILIAE.—On the afternoon of March 25th I took a freshly emerged *Mimas tiliae* here. It was at rest on the wall of a house in close proximity to a lime tree. I presume that this is an unduly early date for this insect, and that its emergence was due to the extremely warm weather experienced during the early part of the month and immediately preceding the date of emergence.—J. G. FRY; Constables, Uppingham, Rutland.

PERCNOPTILOTA FLUVIATA IN SURREY.—On September 14th, 1932, I took a female of this species in this house in the evening.—F. W. J. JACKSON; The Pines, Ashted, Surrey.

# *SPILOCRYPTUS SATURNIAE* BOIE (ICHNEUMONIDAE) IN BRITAIN.

By C. NICHOLSON.

I RECEIVED for identification last November, from Mr. F. W. Thorrrington, of Little Baddow, Chelmsford, part of a cocoon of *Eudia* (*Saturnia*) *pavonia* L. (*carpini*) containing a number of cells resembling a miniature wasp-nest comb. He explained that it had been found in the New Forest and sent to him by his sister, Mrs. B. J. Berry, of Shirley, Southampton. On my writing for further details I learnt from Mrs. Berry that she was on or near Ocknell Plain in the New Forest about the middle of September last, and found the specimen spun up in one of the large tufts of the common moss, *Leucobryum glaucum*, which is plentiful on the ground there amongst the heather.

As I could make nothing of the cells I sent the specimen to Mr. R. B. Benson, of the British Museum (Nat. Hist.), and he reports as follows: "The cocoons were apparently formed by a species of *Ichneumon* (*Spilocryptus saturniae* Boie) parasitic on the Emperor Moth. This species was only recognized last year as occurring in Britain by Dr. C. Ferrière, of the Imperial Institute of Entomology; until then it had been mixed up with the allied species *cimbicis* and *migrator*, and Dr. Ferrière isolated it after referring to Schmiedeknecht. The specimens of this species in the British Museum collection are recorded as follows:

"Scotland: Inchnadamph, Sutherland, 5 ♂ 4 ♀ (*Col. Yerbury*), 1911; Garelochhead, Dumbartonshire, 5 ♂ 3 ♀ (*L. A. L. King*), 15 May, 1931; Kinloch-Rannoch, Perthshire, 6 ♂ 11 ♀ (*W. H. T. Tams*), emerged, July, 1931.

"Ireland.—Belfast, 2 ♀ 2 ♂ (*D. J. Carpenter*), June, 1927.

"All these were bred from cocoons of *Eudia pavonia*."

On my applying to Dr. Ferrière for a key to the species he very kindly allows me to quote as follows from his reply: "It is not at all rare in England." In addition to mentioning the above-quoted specimens masquerading under other names in the British Museum collections, he says: "Looking in the collections again I see that the following further specimens belong also to *S. saturniae* Boie: 3 ♀ of the old Desvignes Collection were under *S. cimbicis* and 1 ♀ under *S. fumipennis*; 3 ♂ labelled 'New Forest, G. T. Lyle, 1906, ex cocoon of *S. carpini*', were named *S. migrator* by Lyle, and 10 ♂ labelled 'Cambridge 1.ix.1919, G. T. Lyle coll.' were named *S. migrator* by Lyle. Much confusion seems to exist between the 5 species: *S. migrator* F., *S. fumipennis* Grav., *S.*

*incubitor* Ström., *S. cimbicis* Tschek, and *S. saturniae* Boie, all of which are found in England.

"At your request I send you keys which will enable further students to distinguish these species. I have made them partly after Schmiedeknecht (*Opuscula Ichneumonologica*, 1931) and partly after my own observations."

#### KEY FOR FEMALES.

1. Hind coxae entirely, or partly, red . . . . . 2.  
Hind coxae entirely black . . . . . 4.
2. All coxae red. Cheeks narrow . . . . . *incubitor*.  
Only the hind coxae red . . . . . 3.
3. Head narrowed behind the eyes. Antennae black with white ring. Ovipositor not longer than half the length of the abdomen . . . . . *cimbicis*.  
Head not, or scarcely, narrowed behind the eyes. Antennae tricoloured (reddish at base, then black with a white ring). Ovipositor as long as the abdomen without the first segment . . . . . *saturniae*.
4. Ovipositor about half the length of the abdomen. Antennae black with a white ring, or rarely reddish at the base. Fourth abdominal segment also red . . . . . *migrator*.  
Ovipositor as long as the abdomen without the first segment. Antennae tricoloured. Only the apex of the first and the second and third abdominal segments red . . . . . *fumipennis*.

#### KEY FOR MALES.

1. Scutellum black or only slightly white at apex . . . . . 2.  
Scutellum white. Hind tarsi generally with a white band . . . . . 4.
2. Hind tarsi without a white band. Clypeus and face black, only facial orbits being white. Hind femora black . . . . . *saturniae*.  
Hind tarsi with white band. Clypeus and middle of face generally also white . . . . . 3.
3. Hind femora red, apically black. Anterior coxae and trochanters white . . . . . *cimbicis*.  
Hind femora black, reddish at base. Anterior coxae and trochanters black . . . . . *migrator*.
4. Propodeon and first abdominal segment without white spots. Hind femora black, reddish at base . . . . . *migrator*.  
Propodeon and first abdominal segment with white spots . . . . . 5.
5. Hind femora and tibiae black . . . . . *fumipennis*.  
Hind femora red . . . . . *incubitor*.

Since the "further specimens" mentioned by Dr. Ferrière, although captured or bred in England, were labelled with other names in the British Museum collections, it follows that this note is the first published record of the status of this species not only as British, but as English, and I have much pleasure in making it

public, and in giving due credit to Mrs. Berry and Mr. Benson for enabling me to do so. My best thanks are due to Dr. Ferrière for his kind help. As Mr. Benson says in his letter to me, "I daresay that when attention is called to this species it will be found in many collections".

Tresillian,  
Truro,  
Cornwall,  
January 29th, 1933.

APATURA IRIS VISITING GREAT KNAPWEED.—The discussion between "J. B." and myself in the *Western Morning News* as to whether *iris* would eat heather or not brought forth an extremely interesting and unexpected record from Miss C. E. Burd, of Okehampton, Devon, who wrote me on July 12th as follows:

"In September, 1911, I was walking with a friend through some fields near S. Brent (Devon), when, passing through one which was full of the greater knapweed (then in flower), we were struck with the extraordinary number of butterflies flitting about and resting on the flowers. It was a really wonderful sight . . . and we identified some of the commoner species—Red Admiral, Tortoiseshell, etc.—but one, a very deep blue with white markings, and, we thought, larger than the rest, was new to us. When I returned home to Epsom, and was telling a friend about the experience, she said, 'Would you know the dark blue one if you saw it again?' I replied 'Yes,' whereupon she went to a cabinet, and, taking two cases from it, said, 'Do you see it amongst those?' I unhesitatingly picked out the Purple Emperor, and she told me that our experience was probably unique." And further, on July 14th: "I am very sorry I can offer you no confirmation of my story. The friend I was with, Vivian Butcher, was killed in the war, and Mrs. Horace Phillips, my Epsom friend, died eight or nine years ago. She was not a collector, as the name is understood in these days, but did it in her young days as an amusement more than anything else, I think. In 1912 she must have been well on towards 70, but a woman keenly interested in all nature. The field in which we saw the butterflies had an oak coppice on one side and oaks all along the river (Avon) bank, with an oak here and there in the hedges which formed the other two boundaries".

I see not the slightest reason to doubt this record and gladly make it public, if only to show that his Imperial Majesty HAS higher tastes than dirty water and carrion!—C. NICHOLSON; Tresillian, February 8th, 1933.

LEUCOMA SALICIS.—With regard to the notes recently published in the *Entomologist* on this insect, for some years I had not noticed it, but one morning in August, 1930, as I cycled to the Pier Head, I took six resting on the lamp-posts, and the next two mornings a further half-dozen in similar positions. In 1931 I took about 20 larvae off willow in my garden at Eastbourne.—S. A. CHARTRES; 4, King's Drive, Eastbourne, March 9th, 1933.

THE TRICHOPTERA AND PLECOPTERA OF THE  
AUVERGNE REGION OF FRANCE.

BY MARTIN E. MOSELY, F.E.S.

IN the December, 1932, number of the *Entomologist* I gave an account of two collecting trips made in the Pyrenees, dealing mainly with Trichoptera. I now give some records of Trichoptera and Plecoptera collected in the summer of 1924 during a small tour in the Auvergne region of France.

The first of my visits to the Pyrenees concluded with a visit of about two hours to Cahors. In the 1924, visit this town formed my starting-off place. The records obtained there during the two days of my stay were, for convenience, included in my previous account, so that I will ignore them on this occasion.

After leaving Cahors, a stay of three days was made at Figeac, little more than a village on the banks of the Lot. The season was unusually dry and the beginning of July found the river very low—perhaps an advantage from a collector's point of view, as wide, shingly stretches along the margins of the river-bed made a systematic search possible amongst the bordering trees and shrubs. In the late evenings *Setodes* species were abundant, flying over the stagnant pools and, although results on the whole were scanty, they were valuable inasmuch as a series of a species rather scarce in collections, *Triaenodes ochreella*, was obtained, and also a single example of *Lype auripilis*—equally desirable to the collector.

From Figeac, a long and wearisome train journey was taken to Mende, in Lozère, and during two wayside halts opportunities were made for hurried collections at St. Flour and Le Monastier. The former is a small town in Cantal, on the banks of the Lander. I have spent many holidays by the riverside, both for trout-fishing and for collecting, but in all my experience I have never come across a dirtier river than the Lander immediately below St. Flour. Inky-black, oily-looking water, a river-bed of black mud and an indescribable stench, such is the Lander, and a more unlikely collecting-ground it would be hard to find. Yet there were seen two hardy inhabitants of this malodorous spot—a single *Hydropsyche instabilis* and a single *Tinodes waeneri*; but it was without regret that I re-entered the train, which later in the day was pulled up at Le Monastier, a railway junction by the banks of the Lot. Here the Lot is fringed with bushes and trees, and an ideal collecting-ground was furnished by a thorn hedge extending a few hundred yards between the railway and the river and teeming with water insects of all kinds. Nothing, however, of special interest was taken,

and similar species came to the net higher up the same river at Mende, which was reached late in the evening, a full day's journey for a distance, as the crow flies, of something like a hundred kilometres.

Mende is an interesting old town in Lozère on the upper waters of the Lot. Excepting for the river, reduced here almost to a trickle, the surrounding country was very dry, and only one small spring, high up the mountain-side, was discovered during my six days' visit. A very striking-looking little *Setodes* species, *interrupta*, was abundant, and I was pleased to find *Adicella filicornis* at the spring mentioned. Also of interest was a new *Hydroptila*, since described as *H. kimminsi*.

Excursions were made to the gorges of the Tarn, and at Ispagnac I was fortunate in capturing an example of *Polycentropus corniger*. *Silo nigricornis* was also taken at Ispagnac--the only examples seen during the trip.

On another excursion an unusual form of *Leptocerus albifrons*, without the customary snowy-white markings of the fore wings, was taken in fair numbers. Preparations of the genitalia failed to disclose any structural differences to warrant its separation from this species.

The holiday concluded at Le Lioran, a resort for the summer, and in the winter, for winter sports, high up the valley of the Alagnon at an altitude of 1150 m. The railway-station and two hotels side-by-side are the only signs of habitation at this spot, and an interesting feature of the neighbourhood is a tunnel 1410 m. in length through which passes the road over the Col.

Le Lioran proved an extremely interesting collecting-ground, and many species peculiar to the Auvergne were taken. Amongst these may be mentioned *Apatania eatomana*, *Pseudagapetus diversus* and *Rhyacophila fraudulenta*. There appears to be some affinity between the Trichoptera of the Auvergne, that of the Pyrenees and also of the Vosges. *Rhyacophila evoluta* and *Limnophilus submaculatus* occur in all three regions, and *Thremma gallicum* and *Stasiasmus rectus* appear to be confined to the Pyrenees and the Auvergne. The last species presents certain local features at Le Lioran; all examples I captured were without the pencil of hairs on the male posterior wing, which is a character of the Pyrenean examples. The spur formula is variable, as occurs in *Drusus annulatus*, and it is very questionable whether *Stasiasmus*, founded solely on the spur formula, is a good genus. I am inclined to the view that the species is a *Drusus*, in which genus it was originally placed by McLachlan.

Another species of considerable interest is the very local *Limnophilus submaculatus*, of which a series, nearly free from all anterior wing-markings, was taken on the banks of a small tributary of the

Alagnon. This species occurs also in Spain, the Pyrenees, the Vosges and Hérault.

Excursions from Le Lioran were made to Murat and to Vic-sur-Cère, and at the former a melanic example of *Philopotamus montanus* was a feature of some interest. I know of no other record of such a form.

A small collection of Plecoptera was made, which included examples of *Leuctra despari* and *Protonemura fumosa* var. *occidentalis*, both species described from the Pyrenees. A species of *Leuctra* closely allied to *inermis*, but I think distinct, was also captured, but the material is not in sufficiently good condition to warrant its description. It may be mentioned that a prominent character is the yellow colour of the femora, and the species also occurs at Mont Louis in the Pyrenees.

The following places were visited during the periods indicated :

Cahors, Lot, 29-30.vi.1924.

Figeac, Lot, alt. 240 m., 1-3.vii.1924.

St. Flour, Cantal, alt. 885 m., 3.vii.1924.

Le Monastier, Lozère, alt. 610 m., 3.vii.1924.

Mende, Lozère, alt. 739 m., 3-8.vii.1924.

Ispagnac, Lozère, alt. 530 m., 5.vii.1924.

Le Lioran, Cantal, alt. 1150 m., 9-19.vii.1924.

Vic-sur-Cère, Cantal, alt. 700 m., 12.vii.1924.

Murat, Cantal, alt. 900 m., 14.vii.1924.

List of species captured :

Fam. LIMNOPHILIDÆ.

*Grammotaulius atomarius*, F.—Le Lioran.

*Limnophilus rhombicus*, L.—Mende.

*L. stigma*, Curt.—Le Lioran.

*L. lunatus*, Curt.—Mende. Murat.

*L. submaculatus*, Ramb.—Le Lioran.

*L. ignavus* (Hag) McL.—Mende.

*L. centralis*, Curt.—Mende, Murat. Le Lioran.

*L. vittatus*, F.—Le Lioran.

*L. affinis*, Curt.—Le Lioran.

*L. auricula*, Curt.—Le Lioran.

*L. griseus*, L.—Le Lioran.

*L. extricatus*, McL.—Vic-sur-Cère.

*L. hirsutus*, Pict.—Murat.

*L. sparsus*, Curt.—Mende, Le Lioran.

*Stenophylax spinifer*, McL.—Mende.

*S. nigricornis*, Pict.—Mende, Le Lioran.

*S. latipennis*, Curt.—Le Lioran.

*Micropterna lateralis*, Steph.—Le Lioran.

*Stasiasmus rectus*, McL.—Le Lioran.

*Drusus annulatus*, Steph.—Le Lioran.

*Hypnotranus (Stenophylax) picicornis*, Pict.—Le Lioran.

*Apatania eatoniana*, McL.—Le Lioran.

#### Fam. SERICOSTOMATIDAE.

*Sericostoma personatum*, Spence.—Mende, Murat, Le Lioran.

*Silo pallipes*, F.—Le Lioran.

*S. piceus*, Brauer.—Mende, Ispagnac, Murat.

*S. nigricornis*, Pict.—Ispagnac.

*Goëra pilosa*, F.—Mende.

*Micrasema moestum*, Hagen.—Mende, Murat, Le Lioran.

*M. minimum*, McL. - Murat, Le Lioran.

*Thremma gallicum*, McL.—Le Lioran.

*Crunoecia irrorata*, Curt.—Le Lioran.

*Lepidostoma hirtum*, F. -Figeac.

*Lasiocephalis basalis*, Kol.—Vic-sur-Cère.

#### Fam. BERAEEIDAE.

*Beraca maurus*, Curt. - Figeac, Mende, Le Lioran.

*Ernodes articularis*, Pict.—Mende.

#### Fam. LEPTOCERIDAE.

*Leptocerus cinereus*, Curt. -Mende.

*L. albifrons*, L. -Le Monastier, Mende.

*Mystacides azurea*, L. -Figeac, Le Monastier, Mende, Murat.

*Triaenodes ochreella* (Ramb.). McL.—Figeac.

*Adicella reducta*, McL.—Mende, Ispagnac, Murat.

*A. filicornis*, Pict. -Mende, Le Lioran.

*Oecetis testacea*, Curt. Mende.

*Setodes interrupta*, F.- Figeac, Le Monastier, Mende.

*S. argenti-punctella*, McL. Figeac.

*S. punctata*, F. -Mende.

*S. viridis*, Fourc. - Figeac.

#### Fam. ODONTOCERIDAE.

*Odontocerum albicorne*, Scop.—Mende, Ispagnac, Vic-sur-Cère, Le Lioran.

#### Fam. HYDROPSYCHIDAE.

*Hydropsyche pellucidula*, Curt.—Le Monastier, Mende, Murat, Le Lioran.

*H. fulvipes*, Curt.- Ispagnac.

*H. instabilis*, Curt.—St. Flour, Mende, Vic-sur-Cère, Murat.

*H. lepida*, Pict.—Figeac, Le Monastier, Mende.



## Fam. POLYCENTROPIDAE.

- Polycentropus flavo-maculatus*, Pict.—Figeac, Mende, Murat.  
*P. corniger*, McL.—Ispagnac.  
*P. intricatus*, Morton.—Vic-sur-Cère.  
*Plectrocnemia conspersa*, Curt.—Le Lioran.  
*P. geniculata*, McL.—Le Lioran.

## Fam. PSYCHOMYIDAE.

- Tinodes waencri*, L.—St. Flour, Mende.  
*T. assimilis*, McL.—Figeac, Le Lioran.  
*T. dives*, Pict. Mende, Ispagnac.  
*Psychomyia pusilla*, F.—Figeac, Le Monastier, Mende.  
*Lyte auripilis*, McL.—Figeac.

## Fam. PHILOPOTAMIDAE.

- Philopotamus montanus*, Donovan.—Mende, Ispagnac, Murat, Le Lioran.  
*P. variegatus*, Scop.—Mende, Murat, Le Lioran.  
*Dolophilus pullus*, McL.—Le Lioran.  
*Wormaldia occipitalis*, Pict.—Le Lioran.  
*W. triangulifera*, McL.—Figeac, Mende, Ispagnac, Le Lioran.

## Fam. RHYACOPHILIDAE.

- Rhyacophila evoluta*, McL.—Le Lioran.  
*R. dorsalis*, Curt.—Mende, Murat.  
*R. septentrionis*, McL.—Le Lioran.  
*R. fraudulenta*, McL.—Le Lioran.  
*R. meridionalis*, Ed. Pict.—Murat.  
*R. aquitanica*, McL.—Le Lioran.  
*R. philopotamoides*, McL.—Le Lioran.  
*R. laevis*, Pict.—Mende, Le Lioran.  
*Glossosoma boltoni*, Curt.—Vic-sur-Cère, Murat, Le Lioran.  
*Agapetus fuscipes*, Curt.—Mende, Le Lioran.  
*A. comatus*, Pict.—Vic-sur-Cère, Murat.  
*A. laniger*, Pict.—Figeac, Le Monastier, Mende.  
*A. delicatulus*, McL.—Le Monastier, Mende, Vic-sur-Cère.  
*Pseudagapetus diversus*, McL.—Le Lioran.

## Fam. HYDROPTILIDAE.

- Ptilocolepus granulatus*, Pict.—Le Lioran.  
*Hydroptila kimminsi*, Mosely.—Mende.  
*Ithytrichia lamellaris*, Eaton.—Mende.  
*Stactobia fuscicornis*, Schneider.—Le Lioran.  
*Orthotrichia angustella*, McL.—Mende.

## PLECOPTERA.

- Perla cephalotes*, Curt.—Mende.  
*P. marginata*, F.—Mende.  
*Perlodes intricata*, Pict.—Le Lioran.  
*Chloroperla grammatica*, Scop.—Le Lioran.  
*Isopteryx torrentium*, Pict.—Le Lioran.  
*Taeniopteryx seticornis*, Klap.—Le Lioran.  
*Leuctra inermis*, Kny.—Le Lioran.  
*L. sp.* near *inermis*, Kny. — Le Lioran.  
*L. despari*, Mosely. — Le Lioran.  
*L. cincla*, Morton.— Le Lioran.  
*Protonemoura fumosa*, Ris, var. *occidentalis*, Despax. --Mende, Le Lioran.  
*P. intricata*, Ris.—Mende, Le Lioran.  
*Nemoura variegata*, Ol.—Mende, Le Lioran.  
*N. marginata*, Pict. Le Lioran.  
*Nemourella inconspicua*, Pict. —Le Lioran.  
*Amphinemoura cinerea*, Morton.—Le Lioran.

## NOTES AND OBSERVATIONS.

FEBRUARY APPEARANCE OF PYRAMEIS ATALANTA.—This morning a single specimen of *Pyrameis atalanta* flew into our garden, and remained there for thirty minutes sunning itself on the paths. Its appearance is rather astonishing on account of the cold weather we are having, but although 3-6° F. of frost has been registered at nights, the days have been sunny, and, out of the wind, quite warm. On Sunday last we had snow showers alternating with bright sun. The time of appearance was 12.50 p.m., wind N.N.W., moderate and increasing; bright sunlight, occasionally obscured with cloud. I took the temperature in that part of the garden where the insect appeared and found it to be 78° F.; in sun and exposed to wind it was 60° F. The part of garden mentioned is completely sheltered from the north by a fence of *Cupressus macrocarpa*, 20 ft. high. The condition of the insect was fair. All four wings were intact, and not in any way tattered, though somewhat worn and dull-looking. On the left fore wing just above the middle of the inner margin was a drab roundish spot, probably a stain, which will readily serve to identify the insect, which my wife also saw, should it appear again.—S. T. STIDSTON; Ashe, Ashburton, S. Devon, February 21st, 1933.

TRICHOPTERA.—In some jars in the Natural History Museum are various species of Caddis worms, Trichoptera, which are being kept more or less under observation as time allows. In one of these jars is an *Oxyethira* species, probably *costalis* Curt., a minute little Micro-Trichopteron not more than  $\frac{1}{8}$  in. in length, and known by a celebrated angler, the late Gilbert S. Marryat, as a "petticoat larva" from

the curious and characteristic shape of its case. It was recently observed that the little larva had suspended itself from a weed 6 in. above its head and was climbing up an invisible thread, gathering it in by means of its diminutive forelegs with a similar action to that of a spider. The presence of the thread was established by passing a rod between the larva and the weed. I believe this observation on the habits of the larva to have hitherto been unrecorded.—MARTIN E. MOSELY; British Museum (Natural History), March 22nd, 1933.

NOTES FROM CALCUTTA: LEPIDOPTERA.—*Unusual food-plant of larva of Euploea core*.—A second instar larva was found on August 20th feeding on the young leaves of Peepul (*Ficus religiosa*). The Peepul was growing out of the top of a wall in Calcutta, and at least a hundred yards from the nearest Oleander, the usual food-plant. It appears probable, therefore, that the egg was deposited on the Peepul, as the larva could not have crawled from the Oleander. It moulted once, and then, unfortunately, died. It was slightly smaller than Oleander-fed larvae, but otherwise typical.

Later, on December 14th, four small and two half-grown larvae were noticed feeding on the same Peepul. I unfortunately had to leave Calcutta the following day and did not return until the 20th, when I found two full-grown larvae only, the others presumably having died or been destroyed by ants. These two survivors were carefully looked after, but showed no inclination to pupate, and died on December 24th. In colour they were the same as Oleander-fed larvae, but the dorsal filaments were both shorter and thicker than normal.

*Emergence of the males of Perina pura*.—The males of this Lymantrid are remarkable in that their wings do not require to droop during expansion. I have frequently watched them emerge from pupae resting on the bottom of a cardboard box, and the moths have not troubled to climb, but have rested beside the empty pupa case whilst the wings developed. As is usual in clear-winged Lepidoptera, there is a sparse covering of loosely attached scales on emergence.

*Green and brown forms of Theretra actea larvae*.—*Theretra actea* has two larval forms, one green and one brown. The green form is the one usually found wild; I have never found a wild brown larva, whilst the brown one appears in captivity. Last October and November I bred several of these larvae, and the following is the record of the occurrence of the two forms. From a batch of six ova I obtained one green and five brown larvae; all were green in the first instar, one became brown in the second, another in the third, and three in the fourth. Three larvae were found in the final instar and were, of course, green. Two others were found in the fourth or penultimate instar and became brown in the final. This July I have again bred several under the same conditions, but with very different results. I have not had a single brown larva. Six of this year's larvae were found in their second and two in their fourth instar.

*Euploea core core* and *Chilasa clytia clytia* flying together.—The resemblance between *Chilasa clytia clytia* in its *dissimillima* and *dissimilis* forms and *Danaüs limniace* has often been remarked, but I cannot recall ever having seen any reference to that existing between typical *clytia* and *Euploea core*. On March 11th I was walking round my garden with a net, and saw, as I thought, three *E. core* flying one behind the other. I caught all three with one stroke, and was surprised to find that I had two *E. core core* males and one *C. clytia clytia* female in the net. *Clytia*, in my opinion, is a slightly better mimic of *E. core* than *dissimillima* is of *D. limniace*; *dissimillima* never has quite the same transparent appearance as *limniace*. Both forms are betrayed, however, when flying above eye level by the orange spots on the underside of the hind wing.—D. G. SEVASTOPULO; c/o Ralli Brothers, Limited, Calcutta, August 31st, 1932.

PYRAMEIS CARDUI AND P. ATALANTA IN IRELAND.—Mr. G. E. Lucas informs me that both these species were observed at Timoleague, co. Cork, on March 29th this year, a day which was warm for the time of year.—T. DANNREUTHER (Capt. R.N.); Windycroft, Hastings.

## SOCIETIES.

ENTOMOLOGICAL SOCIETY OF LONDON.—Wednesday, February 1st, 1933.—Prof. E. B. Poulton, F.R.S., President, in the Chair.—Vice-Presidents—The President announced that he had nominated Dr. H. Eltringham, M.A., F.R.S., Dr. K. Jordan, F.R.S., and Mr. R. W. Lloyd, as Vice-Presidents for the year.—Exhibits.—Dr. Neave, on behalf of Dr. G. Horvath, recorded a further copy of Scopoli, *Entomologia Carniolica*, 1763, including 43 plates, in the Hungarian National Museum, this being the fourth complete copy. Dr. Jordan stated that a fifth copy was in Lord Rothschild's library at the Zoological Museum, Tring. Mrs. M. D. Brindley made remarks on the development of the thoracic stink-glands in Heteroptera. Dr. E. A. Cockayne exhibited (1) *Pterophorus pentadactylus* in cop., with the body of a male, and (2) made a note on the position of rest of the larva of *Aspilotes gilvaria*. Mr. H. M. Edelsten exhibited some specimens of a third brood of *Colias croceus* with unusual markings. Prof. E. B. Poulton, F.R.S., exhibited and made remarks on (1) specimens of *Lucinia cadma*, a Jamaican mimic of *Dynamine zetes* (both Nymphalines), together with Miss Perkins's notes thereon; (2) the 4 ♂♂ and 8 ♀♀ of *Pyrameis cardui* captured migrating at midnight by Sir Donald Kingdom; (3) 12 out of 59 migrating *Libythea labdaca* taken in one sweep of the net by Miss Vinall on August 22nd, 1932, Bongandanga, Belgian Congo; (4) *Papilio ulysseus* captured by a bird when its flight was weakened by damp wings; (5) a wasp's nest observed by Mr. H. L. Guppy, suspended from an electric light bulb in Trinidad, the wasps being unaffected by the powerful light; and (6) pink-hind-winged Phytophaga taken by Prof. T. Bainbrigge Fletcher at Hyères, S. France. Dr. V. B.

Wigglesworth made remarks on the hatching organ of *Lipeurus columbae* (Mallophaga), illustrated with the epidiascope. Dr. K. Jordan, F.R.S., made remarks on the peculiar secondary sexual organs in a Fijian genus of Anthribids, illustrated with the epidiascope. Dr. F. A. Dixey, F.R.S., exhibited a new *Callidryas* illustrated with the epidiascope.

Wednesday, March 1st, 1933.—Prof. E. B. Poulton, F.R.S., President, in the Chair.—*Election of Fellow*.—The following was elected a Fellow of the Society: Boris Jobling, The Wellcome Bureau of Scientific Research, 183-193, Euston Road, N.W. 1.—*Obituary*.—The death of Mr. Alan Druitt, a Fellow of the Society, was announced.—*Exhibits*.—The Secretary, on behalf of Dr. Hugh Scott, read a further note on cells made by bees, from a torrent bed in Central Arabia. Mr. H. StJ. K. Donisthorpe exhibited and made remarks on a species of *Malachius* from Britain. Mr. T. Bainbrigg Fletcher exhibited some specimens of Chrysomelids with pink hind wings from S. France.—Dr. V. B. Wigglesworth and Mr. J. D. Gillett made remarks on the structure and mechanism of the climbing organ of *Rhodnius prolixus*, illustrated by lantern-slides and living specimens.—S. A. NEAVE, *Hon. Sec.*

THE SOUTH LONDON ENTOMOLOGICAL AND NATURAL HISTORY SOCIETY.—January 26th, 1933.—Mr. T. H. J. Grosvenor, President, in the Chair.—*Annual Meeting*.—The usual business of the Annual Meeting was dealt with after a satisfactory Council's Report and balance-sheet had been accepted, and the retiring President read his address, reviewing his breeding experiences with the Zygaenidae, and discussing the migration lines from east to west and the evidences of local migrations. After the votes of thanks were passed, the new President, Mr. C. G. M. de Worms, took the Chair. The Officers and Council for the ensuing twelve months are: President, C. G. M. de Worms, M.A., A.I.C., F.C.S., F.E.S., M.B.O.U.; Vice-Presidents, T. H. L. Grosvenor, F.E.S., and T. R. Eagles; Hon. Treasurer, A. E. Tonge, F.E.S.; Hon. Librarian, E. E. Syms, F.E.S.; Hon. Curator, S. R. Ashby, F.E.S.; Hon. Secretaries, S. N. A. Jacobs and H. J. Turner, F.E.S., F.R.H.S.; Hon. Lanternist, J. H. Adkin; Council, H. W. Andrews, F.E.S., K. G. Blair, B.Sc., F.E.S., G. V. Bull, B.A., M.B., A. W. Dennis, S. Edwards, F.E.S., F.L.S., F.Z.S., C. N. Hawkins, F.E.S., M. Niblett, F. Stanley-Smith, Mrs. M. Stanley-Smith, S. Wakely. Mr. C. N. Hawkins exhibited a bred series of *Mitochrista miniata* and read notes on the life-history.

February 9th, 1933.—Mr. C. G. M. de Worms, M.A., F.E.S., President, in the Chair.—Mr. R. Adkin exhibited a series of *Polychrosis littoralis* taken at light at Eastbourne and a series of *Argyroplote striana* which also came to his light-trap; Mr. O. Farrell, a long series of *Hybernia defoliaria* and contributed notes on the variation shown; Mr. S. Wakely, the immigrant species *Aphomia gularis*, and read notes on its occurrence in this country; Mr. E. E. Syms gave an account of the British species of Mecoptera, illustrated with a fine series of lantern-slides.—HY. J. TURNER, *Hon. Editor of Proceedings*.





M. E. M. photo

John Bale & Co. & Denzelson Ltd. Lond.

ONICIGASTER WAKEFIELDI M<sup>c</sup>Lachlan  
Figure 1, male subimago, 2 male imago

## A POSSIBLY EXTINCT NEW ZEALAND MAYFLY.

By MARTIN E. MOSELY, F.R.E.S.

(Plate III.)

THE preservation of pinned collections of the more delicate insects in museums and private collections is a matter of some concern to those who are in a position of responsibility for their welfare. This applies in particular to the very fragile *Ephemeroptera*. These insects are not only ephemeral in life, but are apt to become ephemeral after death. In the Ronalds Collection, preserved in the Hope Department of the Oxford University Museum, a large proportion of the species in this Order, in the course of the century since their capture, are reduced to unrecognizable fragments of tissue and others are barely determinable.

Accidents, even in the best regulated museums, may sometimes happen, and a single intrusive *Anthrenus* may escape notice long enough to devastate the contents of a drawer. When the species are abundant and can be readily replaced, this is not a vital matter, though the loss of the original specimens, perhaps even the types, is, of course, much to be regretted. But when, as in the case of the New Zealand species, *Omscygaster wakefieldi* McL., there is a possibility that the insect may be nearly, if not totally extinct, the question becomes of very serious import to science.

In the British Museum collections there is a single sub-imago and a single imago of this New Zealand rarity, and in order to ensure that some knowledge of the general appearance of this insect shall be available for future generations, their photographs are being reproduced to illustrate this article. The wasp-like waists are due to shrinkage in drying, but the expanded terminal segments of the abdomen are characteristic of the species.

A few words on the cause of its rarity may not be out of place. We may ascribe it, without doubt, to the introduction of the trout to the waters which it used to frequent. Some believe that the responsibility should be divided between introduced trout and introduced birds, but I fancy the balance of blame must dip heavily in the direction of the trout.

Mr. G. V. Hudson, in his *New Zealand Neuroptera*, quotes Capt. Hutton as remarking, "In 1874 this insect was common in the neighbourhood of Christchurch. I have lived there during the last nineteen years without seeing a single specimen. Whether



they have been killed off by the trout or by the sparrows I cannot say."

Mr. Hudson himself was unacquainted with the insect.

Mr. R. J. Tillyard, in his account of *The Neuropteroid Insects of the Hot Spring Region, in Relation to the Problem of Trout Food*, published in 1921, states: "The larvae of *Oniscigaster*, one of the finest Mayflies of the world, sit about on rocks, and when attacked they only wriggle forward like a shrimp. This magnificent genus is now quite extinct throughout the Hot Springs region, and also in the streams round Christchurch, though still to be found here and there in out-of-the-way places in both islands".

Obviously an insect which, when in the presence of so voracious an enemy as the trout, merely sits on a rock and wags its tail, can have little chance of surviving long in the struggle for existence which continues day by day, minute by minute under the surface of the stream.

Capt. J. S. Phillips, in his Revision of the New Zealand Ephemeroptera in 1930, states that he has never seen a living specimen, though he is informed that it is still occasionally to be seen in the vicinity of Mount Grey, Canterbury.

One last word should be said in protest against *uncontrolled* experiments by private enthusiastic acclimatizationists. It is obvious that the development of a country cannot be made to stand aside in the interests of the preservation of a particular species, and it serves no useful purpose for the lover of science to attempt to bar all efforts to increase artificially the existing resources.

The introduction of trout into New Zealand waters has not only increased the amenities of the islands, providing healthy recreation for many thousands of the inhabitants, but it has also been a factor of no little importance in improving the country's financial position, as, apart from the revenue obtained from licences, it has attracted numberless visitors to New Zealand, who spend their money freely in the country in the pursuit of their favourite sport.

But all acclimatization experiments should be under government control, and carried out under the strict supervision of scientific specialists. In the absence of scientific control, it may well happen, as in fact it has happened again and again, that the interference with Nature will lead, sooner or later, to untold harm, and become a curse instead of a benefit to the countries where it takes place.

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EARLY VANESSA URTICAE LARVAE.—I took a nest of *Vanessa urticae* to-day. Is not this extremely early? I have collected now for over thirty years, but have never taken these caterpillars so early. They were already in their second web.—S. A. CHARTRES; 4, King's Drive, Eastbourne, April 30th, 1933.

## THE LIGHT-TRAP AS AN ADJUNCT TO THE EXPLORATION OF A FAUNA.

BY ROBERT ADKIN, F.R.E.S.

THE exploration of the fauna of a given district, be it large or small, is always interesting, and there can be no doubt that the light-trap is of considerable assistance in attaining that end. Some species not otherwise obtainable will come to light, and others that we may regard as rare may be found to be really quite common when the light-trap is used, possibly because their chief time of flight may be quite late at night or in the very early hours of the morning, when we are not likely to be abroad to find them in any other way.

The area dealt with in these notes is a terraced garden of barely an acre in extent. At the top, the north-east end, stands the house, succeeded by two terraces with flower gardens and lawns, then a low wall followed by a kitchen garden, and near the lower end a high hedge, behind which is a garage and small house. It is bordered on the north-east, north-west and south-west by roads lighted by electric street lamps, and on the south-east is open to the Parades and the sea, rather less than a quarter of a mile away, over other gardens, and needless to say, these Parades are somewhat powerfully lighted. The position, therefore, is not a particularly good one for working a light-trap, on account of the proximity of the lights on the surrounding roads and Parades.

During the latter part of 1930, and throughout the season of 1931, the trap used was what I believe is known as the "American" - a small tin contraption that appears to be fairly effective. It was set outside my library window on the ground floor of the house. During the earlier part of 1932 a modified form of this trap, in which more dark space for the insects to rest was provided, was in operation, with slightly better results, but from August to the middle of November the trap used was built on the lines of that described at p. 226 of the *Entomologist* for 1930, except that for the small resting drawer there shown, one covering the whole bottom of the trap was substituted, with satisfactory results. The outlook from this trap was practically the same as the others.

Calm, warm dark nights were undoubtedly the best; strong winds, from whatever quarter they might blow, or heavy rain almost invariably meant an empty trap.

Although the light-trap is undoubtedly of great assistance in ascertaining what species occur in a given area, it alone must not be relied upon, for it would appear that light has little attraction for some species; for instance both *Miana strigilis* and *Euplexia*

*lucipara* are very common in the garden, and both came freely to sugar, yet not one specimen of either has been found in the light-trap, although placed within a few yards of the trees on the sugared stems of which they had occurred.

In the following list a date following the name of a species signifies that it has been taken only once, or twice, as the case may be; "seldom" signifies some three or four times, and so forth. An asterisk is placed against the names of species that have not previously been recorded for the Eastbourne district, and two asterisks against those new to Sussex.

#### SPHINGIDAE.

*Smerinthus ocellatus*, L.—10.vi.32, although very frequent in the garden.

#### BOMBYCES.

*Cosmotriche potatoria*, L.—11.vii.31. Very common on the Downs half a mile away.

*Nola cucullatella*, L.—22.vii.32.

*Spilosoma menthastri*, Esp.—Occasionally.

*S. lubricipeda*, Esp.—Occasionally.

*Lithosia lurideola*, Zinck.—12.viii.32.

#### NOCTUIDAE.

*Bryophila perla*, Fb.—Frequent.

*Agrotis segetum*, Schiff.—Common.

*A. corticca*, Hb.—2 and 4 vii.32.

*A. puta*, Hb.—Frequent.

*A. exclamations*, L.—Common.

*A. sancia*, Hb.—26.ix.32. Was very common at sugar when used regularly three or four years ago.

*Noctua c-nigrum*, L.—Frequent.

*N. rubi*, View.—Occasionally.

*N. xanthographa*, Fb.—Seldom.

*N. plecta*, L.—Frequent.

*Axylia putris*, L.—1.vii.30.

*Triphaena comes*, Hb.—Occasionally.

*T. pronuba*, L.—Occasionally.

*T. ianthina*, Esp.—Occasionally.

*Barathra (Mamestra), brassicae*, L.—20.viii.32.

*Dianthoecia capsicola*, Hb.—10.vii.32.

*D. cucubali*, Fues.—7.viii.32.

*D. carpophaga*, Bork.—26.vi.32.

- Luperina testacea*, Hb.—Common.  
*Cerigo matura*, Hufn.—14.viii.32.  
*Apamea basilinea*, Fb.—Occasionally.  
*A. secalis*, L. (*oculea*, Gn.).—Frequent.  
*Miana literosa*, Haw.—11.viii.31.  
*Xylophasia monoglypha*, Hufn.—Frequent.  
*Epunda licheneu*, Hb. -In 1931 seven males were taken; in 1932 over thirty. Previously regarded as rare in Sussex.  
*Phlogophora meticulosa*, L.—Frequent.  
*Leucania pallens*, L.—Seldom.  
*L. lithargyrea*, Esp.—Occasionally.  
*L. conigera*, Fb.—24.vii.32.  
*Caradrina morpheus*, Hufn.—Common.  
*C. taraxaci*, Hb.—5.viii.31.  
*Amphipyra tragopogonis*, L.—31.viii.31.  
*Calymnia trapezina*, L.—Seldom.  
*Dyschorista fissipuncta*, Haw.—31.vii.32.  
*Omphaloscelis lunosa*, Haw.—Fairly common.  
*Amathes lynchnidis*, Hb.—Fairly common.  
*Rivula sericeulis*, Scop.—13.ix.31.  
*Scoliopteryx libatrix*, L.—1.ix.30.  
*Plusia gamma*, L.—Frequent, at times very common.

## GEOMETRIDAE.

- Geometra vernaria*, Hb.—6.viii.32.  
*Acidalia virgularia*, Hb.—Common.  
*A. aversata*, L.—Frequent.  
*A. dimidiata*, Hufn.—Occasionally.  
*A. marginipunctata*, Göze.—Occasionally.  
*A. interjectaria*, Guen.—9.vii.32.  
*Timandra amata*, L.—31.viii.31.  
*Ortholita limitata*, Scop.—19.vii.32.  
*O. bipunctaria*, Schiff.—Common.  
*Anaitis plagiata*, L.—22.vi.32.  
*Lobophora viretata*, Hb.—29.viii.31.  
*Cheimatobia brumata*, L.—Occasionally.  
*Lygris associata*, Bork.—Occasionally.  
*Cidaria truncata*, Hufn.—Frequent.  
*Coremia unidentaria*, Haw.—25.viii.32.  
*C. designata*, Rott.—Seldom.  
*Amoebe viridaria*, Fb.—1.vii.32.  
*Oporabia dilutata*, Bork.—Occasionally.  
*Xanthorhoë montanata*, Bork.—8.vi.32.  
*X. fluctuata*, L.—Common.  
*X. galiata*, Hb.—Occasionally.

- X. sociata*, Bork.—Seldom.  
*Mesoleuca ocellata*, L.—Occasionally.  
*Campogramma bilineata*, L.—Occasionally.  
*Eupithecia oblongata*, Thunb.—20. viii. 32.  
*E. linariata*, Fb.—Frequent.  
*E. vulgata*, Haw.—Frequent.  
*E. haworthiata*, Stt.—Seldom.  
*Gymnoscelis pumilata*, Hb.—Frequent.  
*Chloroclystis coronata*, Hb.—5. viii. 32.  
*C. rectangulata*, L.—Frequent.  
*Pelurga comitata*, L.—Seldom.  
*Phibalapteryx tersata*, Hb.—Frequent.  
*Abraxas grossulariata*, L.—Common.  
*Selenia bilunaria*, Esp.—11. viii. 32.  
*Gonodontis bidentata*, Clerck.—Frequent.  
*Crocalis elinguaris*, L.—Common.  
*Ourapteryx sambucaria*, L.—15. vii. 32.  
*Opisthograptis luteolata*, L.—Occasionally.  
*Pachys betularia*, L.—25. vii. 30.  
*Boarmia gemmaria*, Brahm.—Common.  
*Thamnonoma wauaria*, L.—Sometimes common.

#### PYRALIDINA.

*Myelois cribrella*, Hb.—8. vii. 32. Only previous record for Sussex, two or three specimens taken on the Crumbles and the Downs near Eastbourne, 1929-32.

- Aphomia sociella*, L.—Common.  
*Crambus culmellus*, L.—Frequent.  
*C. hortuellus*, Hb.—Common.  
*C. perlellus*, Scop.—Seldom.  
*C. geniculeus*, Haw.—Abundant.  
*C. tristellus*, Fb.—Sometimes common.  
*Notarcha ruralis*, Scop.—3. viii. 32.  
*Eurrhynx urticata*, L.—Occasionally.  
*Phlyctaenia ferrugalis*, Hb.—Occasionally.  
*P. prunalis*, Schiff.—Seldom.  
*Nomophila noctuella*, Schiff.—Sometimes abundant.  
*Scoparia angustea*, Steph.—Common.  
*S. frequentella*, Stt.—Common.  
*S. cembrae*, Haw.—Frequent.  
*S. dubitalis*, Hb.—Common.  
*Evergestis flammealis*, Schiff.—Frequent.  
*Mesographe forficalis*, L.—Frequent.

## PTEROPHORIDAE.

*Alucita pentadactyla*, L.—Frequent.

*Pterophorus monodactylus*, L.—25.viii.32.

## TORTRICINA.

\**Phalonia atricapitana*, Steph.—Frequent.

*Euxanthia straminea*, Haw.—17.ix.31.

*E. zoegana*, L.—17.vii.32.

*E. hamana*, L.—4.vii.30.

*Batodes angustiorana*, Haw.—12.vii.32, although very common in the garden.

*Cacoecia podana*, Scop.—Common.

*C. rosana*, L.—Common.

*C. pronubana*, Hb.—(♂) 22 and (♀) 29.ix.32. Probably accidental. The species was breeding freely on a *Coronilla* growing beside the trap, and the moths may have entered for shelter after their early morning flight, as they often do at the windows of the house.

*Pandemis heparana*, Schiff.—Very common.

*P. ribeana*, Hb.—13.vii.32.

*Tortrix loeflingiana*, L.—12.vii.32.

*T. viridana*, L.—Frequent.

*T. unifasciana*, Dup.—Occasionally.

*Cnephasia virgaureana*, Treits.—24.vii.32.

*C. incertana*, Treits. (*subjectana*, Guen.).—6.vii.30.

*Argyrotoxa forskaleana*, L.—Seldom.

*Peronea holmiana*, L.—Occasionally.

*P. contaminana*, Hb.—Frequent.

*P. aspersana*, Hb.—Seldom.

*P. comariana*, Zell.—Frequent. Only one previous record for Sussex (*Entom.*, 1930, p. 114).

*P. logiana*, Schiff.—27.ix.32.

*P. variegana*, Schiff.—Very common and very variable.

*Spilonota ocellana*, Fb.—Frequent.

*Acroclita naevana*, Hb.—2.viii.32.

\*\**Evetria purdeyi*, Durr.—28.viii.30.

*Notocelia rosaecolana*, Doubl.—Common.

*N. trimaculana*, Haw.—Seldom.

*N. roborana*, Treits.—Seldom.

*Eucosma trimaculana*, Don.—Occasionally.

*E. cana*, Haw.—23.vii.32.

*E. fulvana*, Steph.—Occasionally.

*E. tripunctana*, Fabr.—Seldom.

*Bactra lanceolana*, Hb.—20.viii.32.

- \**Polychrosis littoralis*, Curt.—Frequent.  
*Argyroplote ochroleucana*, Hb.—1.vii.31.  
*A. striana*, Schiff.—Common.  
*A. lacunana*, Dup.—10.vii.32.

## TINEINA.

- Metzneria metzneriella*, Stt.—5.vii.32.  
*Telphusa fugitivella*, Zell.—Seldom, although common enough in the garden at rest on tree-trunks.  
*Gelechia domestica*, Haw.—Common.  
 \**G. affinis*, Haw.—Seldom.  
*G. terrella*, Hb.—Common.  
*G. mulinella*, Zell.—Occasionally.  
 \**Platyedra malvella*, Hb.—Occasionally.  
 \*\**Phthorimaea suadella*, Rich.—30.viii.30.  
 \**P. costella*, Westw.—21 and 27.ix.32.  
*Oegoconia quadripuncta*, Haw.—Common.  
 \*\**Chrysoclista atra*, Haw.—22.vii.32.  
*Batrachedra praeangusta*, Haw.—1.viii.30.  
*Blastobasis lignea*, Wals.—Common.  
*Endrosis lactella*, Schiff.—Common.  
*Borkhausenia pseudospinetella*, Staint.—Very common.  
*Carcina quercana*, Fb.—Common.  
*Depressaria costosa*, Haw.—Common.  
*D. assimilella*, Treits.—21 and 22.ix.32.  
*D. arenella*, Schiff.—Frequent.  
*D. applanata*, Fb.—1.v.32.  
*D. yeatiana*, Fb.—Occasionally.  
 \*\**Elachista nigrella*, Haw.—20.vii.32.  
*E. cygnipennella*, Hb.—24.vi.32.  
 \**Argyresthia conjugella*, Zell.—26.vi.32.  
*Swammerdamia pyrella*, Vill.—Occasionally only, although very common in garden.  
*Hyponomeuta malinella*, Zell.—Seldom, although very common in the garden.  
*Coleophora nigricella*, Steph.—Occasionally.  
*C. crocogramma*, Zell.—9.viii.32.  
*Lithocolletis messaniella*, Zell.—Frequent.  
*L. spinicolella*, Zell.—17.ix.32.  
*Phyllocnistis suffusella*, Zell.—20.viii.32.  
*Gracilaria syringella*, Fb.—Frequent.  
*G. elongella*, L.—11.viii.32.  
 \**Epermenia chaerophyllella*, Göze.—22.vii.32.  
*Cerostoma xylostella*, L.—Frequent.  
*C. vittella*, L.—7.ix.32.

*Plutella porrectella*, L.—12. viii. 31.

*P. maculipennis*, Curtis.—Sometimes abundant.

*Acrolepia granitella*, Treits.—Occasionally.

*Leucoptera laburnella*, Stt.—Frequent.

*Tischeria marginata*, Haw.—Seldom.

*Bucculatrix boyerella*, Dup.—Occasionally.

\*\**Monopis crocicapitella*, Clem.—4. viii. 32.

*Tinea arcella*, Fb.—4. viii. 32.

*T. cloucella*, Haw.—5. vi. 31.

*T. fuscipunctella*, Haw.—2. viii. 30

*T. pellionella*, L.—Occasionally.

#### HEPIALIDAE.

*Hepialus lupulinus*, L.—Frequent.

*H. sylvarum*, L.—30 viii. 30.

“Hodeslea,”

Eastbourne;

January, 1933.

WICKEN FEN FUND.—This fund is raised annually by entomologists to assist in defraying the expenses incurred by the Custodians of Wicken Fen, the National Trust, in administering and preserving the Fauna and Flora, and in providing a watcher. The Fen is unfortunately most inadequately endowed, and it is a severe strain upon the scanty resources of the Custodians, who have to contribute a considerable sum annually towards its upkeep. Contributions to the Fund are earnestly solicited; they should be sent to the Hon. Treasurer, W. G. SHELTON, West Watch, Oxted, Surrey.

EUVANESSA ANTIOPA IN KENT.—My friend Mr Edward Goodwin writes me saying his neighbour, the Rev R. Reeves, on April 6th last watched a Camberwell Beauty drinking at a pool of water in the garden of Broomcroft Cottage, Watlingtonbury. He described it as having a very pale border to its wings—almost white—and being in very good condition. Although this may have been one of the specimens liberated last July by Messrs. Samuel Jones, of Camberwell, it is interesting to note that in this case it had survived hibernation in this country. On the other hand, it might have been a genuine immigrant to our shores last summer—F. W. FROHAWK; May, 1933.

HIBERNATION OF PYRAMEIS ATALANTA.—By way of “companion picture” to my note on this subject on pp 113 and 114 of the last volume, I may put on record that a correspondent, Mrs. A. L. Knight, of Stoke, Plymouth, states that she saw a Red Admiral on January 9th last resting on one of the windows of her house, which faces south, and that the morning was very bright and sunny—almost a hot one. She adds: “When it flew away it was quite strong on the wing”.—C. NICHOLSON; Tresillian, Cornwall, February 10th, 1933.

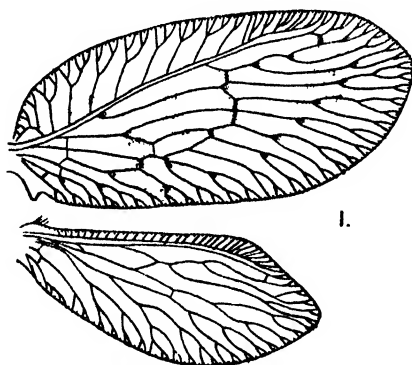


NEW SPECIES OF *NOTIOBIELLA*, FROM AFRICA AND SEYCHELLES (NEUROPTERA, HEMEROBIIDAE).

By D. E. KIMMINS.

*Notiobiella turneri*, sp. n.

♂. Head yellowish, genae and a spot on each side of the occiput dark brown, palpi black. Antennae greenish yellow, towards their bases (excluding the basal and sub-basal joints) pinkish, the extreme tips brownish. Body yellowish green, faintly marked with brown; legs greenish. Superior appendage, seen from the side (Fig. 2), elongate, broad at the base, its lower margin excised and its apex turned abruptly downward. From the lower margin, basad of the

FIG. 1 — *Notiobiella turneri*, sp. n., ♂; right wings.

excision, there arises a slender pointed process, directed inward (Fig. 3). Last ventral segment rounded at the apex. The internal genitalia (Fig. 4) consist of an arch-shaped framework, bearing at both lower angles a slender curved process. Attached to the upper portion of the framework is an elongate plate, its sides turned downward and ridged longitudinally, and its apex terminating in a median process and two lateral downturned flaps. Beneath this plate is a membranous lobe, clothed with numerous small hairs.

Anterior wing (Fig. 1) elongate, veins pale green, membrane hyaline, marked with brown at the bases of the radial sectors, about the cross-veins and at the forks of many veins. Costal area broad at base, gradually narrowing towards the pterostigma. Cellule enclosed by recurrent nervure broad. Eight cross-veins in the costal area between the recurrent nervure and the pterostigma. Subcostal area very narrow throughout the greater part of its length,

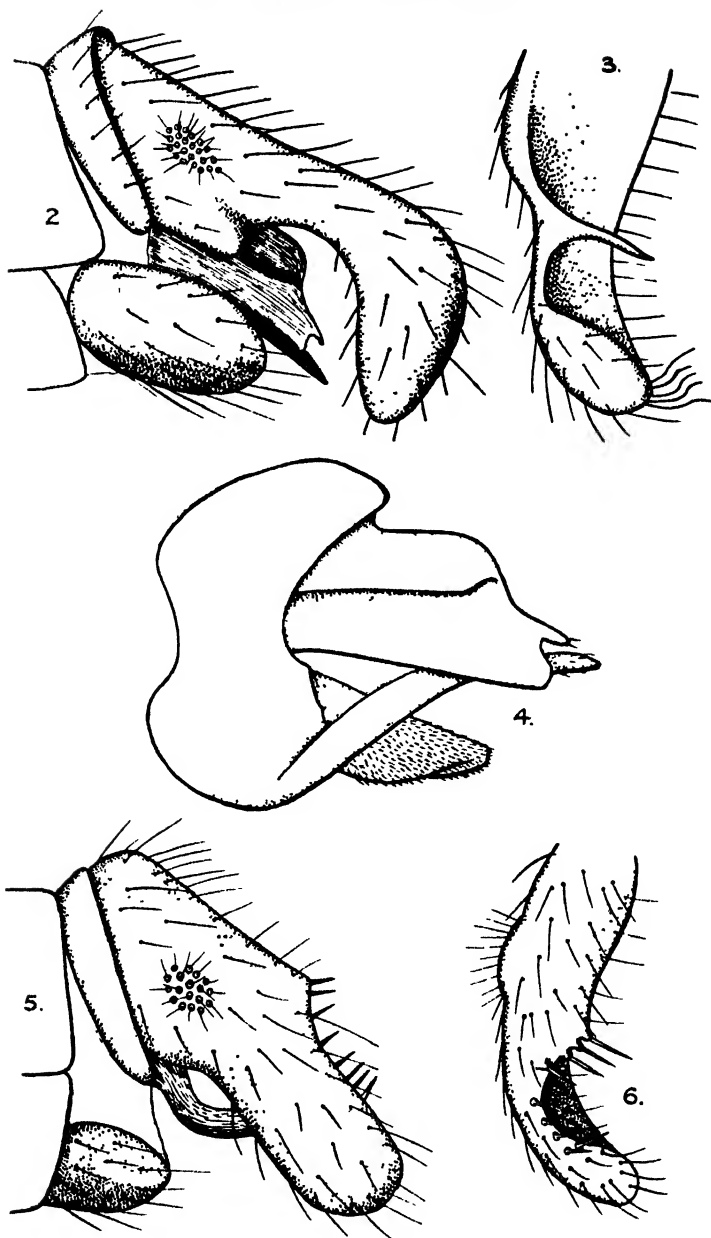


FIG. 2.—*Notobiella turneri*, sp. n., ♂; genitalia from side.

FIG. 3.—*Notobiella turneri*, sp. n., ♂; ventral view of right superior appendage.

FIG. 4.—*Notobiella turneri*, sp. n., ♂; internal genital structure from side.

FIG. 5.—*Notobiella costalis*, Banks, ♂; genitalia from side.

FIG. 6.—*Notobiella costalis*, Banks, ♂; left superior appendage from above.

but widening behind the pterostigma. Two radial sectors, the first forking at the level of the origin of the second, which emits two branches before the series of marginal forks. M forked beyond the origin of 1st Rs. Cu forked near the base of the wing. 1A, 2A, 3A present and forked. A series of four cross-veins in the disc of the wing and one between R and 2nd Rs in the apex of the wing.

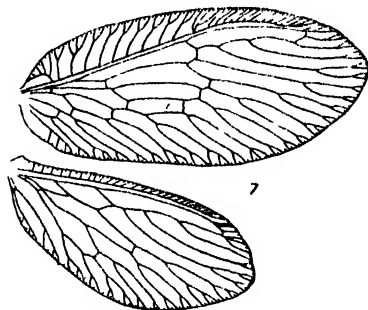


FIG. 7.—*Notiohiella rosea*, sp. n., ♂; right wings.

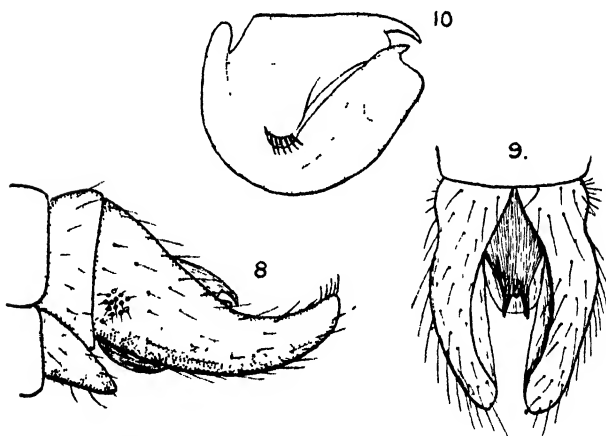


FIG. 8.—*Notiohiella rosea*, sp. n., ♂, genitalia from side.

FIG. 9 —*Notiohiella rosea*, sp. n., ♂; genitalia from above.

FIG. 10.—*Notiohiella rosea*, sp. n., ♂; internal genital structure from side.

Posterior wing elongate, broadest beyond its middle; membrane hyaline, veins greenish. Costa arched in the region of the pterostigma. Two false origins to Rs, which carries three branches. One cross-vein in the disc of the wing and one between R and Rs in the apex of the wing.

Length of anterior wing  $6\frac{1}{2}$  mm., posterior wing  $4\frac{1}{2}$  mm.

1 ♂, S. Africa, Cape Province, Mossel Bay, vi-vii, 1930 (*R. E. Turner*). Type in the British Museum (Nat. Hist.).

This species is related to *Notiobiella costalis*, Banks (1918), by its general appearance, and particularly by the unusually narrow subcostal area. It can be readily distinguished from *N. costalis*, Banks, by the form of the ♂ genitalia and its more elongate anterior wing.

*N. decora*, Kimmins (1929), also has the narrow subcostal area in the anterior wing, but the striking marking of that species and its more numerous longitudinal veins in the outer part of the anterior wing will serve to separate the two species

### *Notiobiella rosea*, sp. n

♂. Head yellowish, genae brownish, eyes reddish brown. Antennae yellowish, darker towards their apices, basal joints large, subcylindrical. Thorax convex, about one and a half times as long as broad, slightly narrowed from base to apex, its anterior margin rounded; colour yellowish, with a transverse brown band anteriorly and another on the disc. Mesothorax and metathorax dull yellowish, with sparse golden hairs. Legs yellowish, the tibiae in parts suffused with reddish. Abdomen yellowish. Superior appendages (Fig. 8) subconical, curving upwards towards rounded apices, and clothed with fine hairs. Between these appendages there is a median internal process, triangular in lateral view (Figs. 9, 10), terminating in two down-curved hooks. The upper surface of this process is more strongly chitinized than the lower, which is armed with a number of stout bristles on each side towards the base. Attached to the base of the median process are a pair of thin chitinous appendages, united above and curving downwards and caudad and forked at their apices. Both these appendages are enclosed in a membrane, for which they form a support.

Anterior wing elongate (Fig. 7), apex obtusely rounded. Membrane hyaline, venation in places pinkish, marked on the cross-veins, and on the forks of the veins with brown. Costal area broad, narrowed towards the base, the recurrent nervure enclosing a semi-circular cellule. Costal cross-veins forked as far as the origin of the second radial sector. The first radial sector arises near the base of the wing, and the second shortly before the gradate series, which consists of four cross-veins.

Posterior wing elongate, broadest beyond its middle, the apex acute. Membrane hyaline, venation pale, tinged with reddish, two cross-veins on the disc of the wing.

Length of body, 5 mm.; of anterior wing, 5 mm.; of posterior wing, 4 mm.

1 ♂, Seychelles, Mahe, 1908-09 (Percy Sladen Trust Expedition). Type in the British Museum (Nat. Hist.).

### REFERENCES.

- BANKS, N.—*Bull. Mus. Comp. Zool.*, 1918, lxi, p. 13, pl. ii, fig. 21.  
KIMMINS, D. E.—*Ann. Mag. Nat. Hist.*, 1929 (10), iii, p. 126, fig. 1.

## RHOPALOCERA OF THE MULLET PENINSULA, CO. MAYO.

BY S. B. HODGSON.

THE Mullet peninsula in the Erris district of Co. Mayo is barren, entirely treeless, extremely storm-swept, and isolated from more fertile areas by 40 miles of bog and mountain. It has extensive sandhills along the Western Atlantic coast, and large areas of high peat moorland in the north. Much of the remaining ground is poor pasture land. The following butterflies have been noted on the peninsula during several visits in June or July since 1925, and it is extremely doubtful whether earlier or later visits would add more than one or two species to the list.

*Pieris brassicae*.—Summer brood common on cultivated land : always well out by first week of July. Indistinguishable from the English summer form except that it may be a trifle larger.

*Pieris rapae*.—Much less common than the last species.

*Pieris napi*.—Appears to be rather local and chiefly confined to a few swampy meadows. The summer brood is seldom well out until the middle of July. In 1926 it was common by July 7th and nearly a hundred were taken in two days, but since then only a few have been seen each year before returning to England. The black markings are intense in both sexes. The females are somewhat suffused with black, especially on the fore wings, and often have one or more black spots in centre of hind wings. None approach the banded form on fore wings. One or two have a strong creamy tint. On the whole the forms are less striking than in many other Irish localities.

*Vanessa urticae*.—Many nearly full-grown larvae found on July 11th, 1929.

*Pyrameis cardui*.—One or two migrants seen in 1928

*Melitaea aurinia*.—Mr. L. A. E. Sabine found a strong colony in 1924. I have looked over the ground each year, but have always been too late, or else the colony has moved on.

*Aphantopus hyperanthus*.—Only one or two seen, there is little likely ground for it.

*Epinephele jurtina*.—Generally distributed. Most common in meadows. The males are very dark, and many of them, though by no means all, have a well-developed bright orange patch around and below the apical spot. Both sexes are much larger than in England. The females are not well out until July. The extent of orange on the ♀ fore wings is much as in England, and varies in the same way, but the tint is far brighter. The normally indistinct pale band on the hind wings is sometimes extremely well coloured with orange, but this form has to be looked for. All the usual

minor variations in connection with the apical spot are found, also extra spots on upper and underside of fore wings. A rare form has a small spot near the anal angle on the upperside.

*Coenonympha pamphilus*.—Found in all meadows, but scarce at this period; probably fairly common at end of May.

*Heodes phlaeas*.—Odd specimens seen most years, sometimes in good condition, but the period is between broods.

*Polyommatus icarus*.—The commonest butterfly on the peninsula. Single-brooded, and on the wing in variable numbers from early June to the end of July. In favourable years it is abundant on the sandhills; elsewhere it occurs very locally in meadows and on patches of rough ground in small numbers. The forms are typical of the West of Ireland race. The males generally bright blue var. *clara*, the majority of females well scaled with bright blue and with extremely well-developed orange lunules. The males not infrequently have well-developed black spots on the outer margin of the hind wings (*ab. nigromaculata* Ckll.). Very occasionally from two to five more or less distinct pink spots are present: they are placed just above the black spots previously mentioned, and in my experience only occur in conjunction with them. There is a strong tendency towards obsolescence of spots on underside, and an equally marked absence of forms showing extension or junction of submedian and basal spots. Gynandromorphs are very rare, but I took two equally halved ♂ and ♀ on June 30th, 1929.

*Coenonympha damus*. The only likely ground is on the peat moors in the north. I have not seen the species, and Mr. Sabine made a special search for it in 1924 without success.

St Philip's,  
Charles Street,  
Berkhamsted, Herts.

IMMIGRANT LEPIDOPTERA.—S.E. Union of Scientific Societies' Immigration Scheme: The following records have come to hand so far:

*Pyramis cardui* L.—Co. Cork, Ireland, 29.iii.33 (Mrs. G. E. Lucas); one specimen, Fareham, Hants, 6.v.33 (A. H. Sperring); one specimen, Littlehampton, Sussex, 8.v.33 (Major H. C. Jeddere-Fisher).

*P. atalanta* L.—Co. Cork, Ireland, 29.iii.33 (Mrs. G. E. Lucas); three specimens, Start Point Lighthouse, S. Devon, 11.iii.33 (A. W. Godfrey); three specimens, Start Point Lighthouse, S. Devon, 17.iv.33 (A. W. Godfrey).

*Pernoptilota fluviata* Hb.—One ♂, Cosham, Hants, 5.v.33 (A. H. Sperring).—W. FASSNIDGE, Recorder; 47, Tennyson Road, Southampton.

## NOTES ON BRACONIDAE\*: XIV.—ALYSIIDES.

By CLAUDE MORLEY, F.R.E.S., F.G.S., F.Z.S.

THIS small group of insects has received very little attention in Britain, and the indigenous species still rest upon Haliday's Essay on the Classification of Parasitic Hymenoptera (*Entom. Mag.*, 1838, 5 : 209-248, figs.). The Alysiiides differ from the remainder of the subfamily Alysiniæ *seu* Exodontinæ in the invariable possession of two cubital cells in the front wing; and, as a whole, the subfamily is instantly recognized among all other Braconidae by the structure of the mandibles, which are so short as not or hardly to touch each other at their extremities. Marshall's tables of genera and species in *Trans. Ent. Soc.*, 1894, and André's *Spp. Hym. Europ.*, are so thoroughly satisfactory that it were superfluous to reproduce them here: hence I am enabled to devote the more space to biological and distributional details. Classification is fundamentally essential, for without it we are in Stephensian chaos; but when a sound system has been attained (and I have found but one species that I need describe as new in the group in question), we are enabled to reach forward to those biologic and economic aspects that render the present insects so beneficial in ridding man of "flies", or conversely injurious in destroying flies which rid the earth of noisome matter. It will be seen that these pretty little Braconids live in all kinds of foul matter; putrescent fungi, animal excreta, decaying vegetables, etc. Ichneumonidae are coming to be bred for dissemination as a deterrent among agricultural pests: but the official mind is muddily slow to appreciate the full use of parasites, and none has yet been made of Alysiiides. Of them, many are entirely ubiquitous but such neglect has hitherto dogged the group that numerous species are still termed extremely rare that are, in reality, very common indeed. The rarity rests with their observers. Of the sixty-nine British Alysiiidae, only sixteen are not represented in my collection, and Suffolk can boast no less than forty-four species, despite the county's paucity of workers upon such parasites.

These sixty-nine are classified thus:

1. *Chasmodon apterus*, Nees.—Somewhat uncommon: Hampstead, several swept in field, July (E. A. Newbery); in cut grass at Yelverton, Devon, July (Keys); Devonport, in May (De la Garde); Shere, in Surrey (Capron); Barnard Castle, in Yorks, August (G. B. Walsh). Suffolk, local in July and September, always in sandy places at the roots of dock, etc.

\* Cf. *Entom.*, 57 : 193

2. *Panerema inops*, Fst.—Several in sand-pit at Shere (Capron). Male still unknown.

3, 4. *Syncrasis fucicola*, Hal., and *S. Halidayi*, Fst.—Found commonly in dry sea-weed on the Irish coast, by Haliday alone, though of the latter he adds "*prope Londinum legit*" by Francis Walker, presumably alongside the Thames. I know neither.

5. *Trachyusa aurora*, Hal.—Termed rare. but Lance Carr cites Lichfield (*Trans. N. Staffs Field Club*, 1925-6, p. 5), and I have it from Capron's Shere collection, and myself swept females both at Norton Wood in the Isle of Wight on the morning of June 20th, 1907, and at Rhinefields in the New Forest on July 12th, 1909. Probably attached to fungi.

6. *Alloea contracta*, Hal.—Both brachypterous and macropterous forms at Shere (Capron). The former seems slightly the more frequent, indicating the species' sphere of activity restricted; always in marshes, sometimes in flood-refuse as at Bubwith in Yorks (Newbery), at others among alder, as in Suffolk, and Horning in Norfolk. The latter at Cremyl in Wales during August (Newbery), and in Suffolk swamps during September. The male is recorded from Cadder under the name *Lamadatha testaceipes* by Cameron (*Ann. Mag. Nat. Hist.*, 1900, p. 539; cf. *Entom.*, 1909, p. 96).

7. *Cratospila circe*.—Said to be "very rare; it has not occurred since Haliday's '*habitat prope Londinum lecta rarissime*' of 1838"; I took a male in Southwold salt-marshes on September 18th, 1912, and a female on Monks Soham house-window on July 6th, 1923, both in Suffolk.

8. *Alysia manducator*, Panz.—This is one of the commonest and best known of all British Braconids, ubiquitously seen flying and sucking the stylopods of flowers; it seems evenly distributed throughout Europe. Curtis found it to lay eggs in larvae of Anthomyid Diptera, and the larvae to pupate within their pupa-skins (*Farm Ins.*, 143). Marshall quotes Bouché as describing these larvae as "oblong, fleshy, white, soft, glabrous and semi-transparent; head somewhat rounded, oral parts indistinct; dorsal segments elevated, the anal segment narrowed; length 2 lines; Cocoon covered with a yellowish tissue of great tenuity" (*Naturg. Ins.*, 1834); and instances as hosts the Anthomyid *Hydrotaea dentipes*, F., with the Muscids *Cyrtoneura stabulans*, Fall. and [Giraud, *Ann. Soc. France*, 1877, 7: 415] *Lucilia caesar*, L., along with the Staphylinid *Creophilus maxillosus*, L., which is the sole record of Alysiides from any Beetle, and backed by a reference to *Ent. Mo. Mag.*, where I quite fail to run it down.

No more select in its carrion, whence it always emerges with unsullied wings (Kirby and Spence's *Introd.*), than are its hosts, it has been found in rook (Marshall), in starling, sparrow and mole,



whence it has emerged from puparia of *Calliphora erythrocephala*, L., in 1906; in rat from those of the same host early in 1907; and in mole from them again in October, 1907. Bred from the accompanying puparium of a *Lucilia* at Bristol in 1908. Ovipositing on July 13th, 1904, in a mass of dipterous larvae at Nairn, in a rabbit; in both May and September, 1903, females were in rabbits at Whitsand Bay and the Tavy valley; in Suffolk from rabbits on May 27th, 1907, and June 29th, 1899, from a horse's shin-bone on June 4th, 1902, from a cod's head on June 10th, 1903, from among dipterous larvae in hedgehog on May 27th, 1900, and in moles on June 10th, 1917, and August 22nd, 1932. Many were in a foal of the New Forest ponies on May 22nd to 26th, 1895. I have specimens from Devon (Keys), Bristol (Charbonnier), Wilts (Morley), Hants (Elliott, Miss Chawner), Surrey (E. A. Butler), Sussex (Bloomfield, Esam), Kent and London (Edw. Saunders), Norfolk (Newbery), Lincs. (Thornley), Notts. (Prof. Carr), Staffs (L. Carr), Skene (Elliott), Edinburgh (McDougall), Nairn (Col. Yerbury) and Ayrshire (Dalglish). The sexes occur in about equal proportion throughout Suffolk from Brandon to Felixstow.

9. *A. soror*, Marsh.—One female, from the London district, alone is known. The *undescribed* male differs only in the usual sexual characters; it was swept at Nutherry, Gretna, Scotland, on May 16th, 1929, by James Murray, who most kindly gave me the specimen.

10. *A. rufidens*, Wesm.—A female occurred to me at Brandon staunch, Suffolk, on September 28th, 1907.

11-13. *A. loripes*, Hal.—A unique female from Windsor, and *A. similis*, Nees, once taken near London, are both unknown to me. But Wilson Saunders took *A. fuscipennis*, Hal., at Reigate, and I have an unrecorded male from Botolphclaydon, *ex* Marshall's collection.

14. *A. mandibulator*, Nees.—Lichfield (Carr). The *undescribed* male differs only in sexual characters; it was swept from weeds in Easton Broad on the Suffolk coast on September 4th, 1907.

15. *A. atra*, Hal.—Certainly uncommon; a male was swept off marram-grass on Lowestoft denes by the sea on September 12th, 1912.

16. *A. truncator*, Nees.—Parasitic on the diptera *Anthomyia platyura*, Mg., and *Agromyza macquarti*, Dsv., on the Continent. Probably a common kind in Britain; I have taken it at Mildenhall and several at Salisbury, and received it from Gretna in Scotland.

(To be continued.)

## NOTES AND OBSERVATIONS.

EARLY EMERGENCES OF LEPIDOPTERA.—The following dates of early emergence this spring may be of interest: *Euchloë cardamines*, April 3rd; *Hesperia malvae*, April 15th; *Thanaos tages* and *Brenthis euphrosyne*, April 30th, the latter in such numbers that it had probably been out for some days; *Cilix glaucata*, April 11th; *Ematurga atomaria*, April 16th; *Phragmatobia fuliginosa*, April 19th (Dorset); *Macroglossa stellatarum* appeared in the Rectory garden in the week before Easter.—G. V. BULL; Sandhurst, Kent.

[To these might be added *Hipocrita jacobaeae*, of which I observed a solitary example in my garden at Selsey on April 30th.—N. D. R.]

EUCHLOË CARDAMINES IN MID-APRIL.—On Friday, April 14th, I saw in the garden here a male *E. cardamines*. I think it is the earliest date on which I have seen it. Either the same one or another was seen again on the 16th.—W. G. SHELDON, West Watch, Oxted, Surrey.

On April 10th I observed a male *E. cardamines* flying in Charing Cross Road.—E. C. JOY; Moore's Hotel, The Leas, Folkestone.

EARLY BUTTERFLIES.—On March 26th the first *Pieris rapae* (afterwards quite plentiful) was seen, and on March 27th several *Vanessa io*. It was remarkable how *Gonepteryx rhamni*, first seen on March 11th, suddenly disappeared towards the end of the month, but *Vanessa io* is much more in evidence than usual. The first *Pararge aegeria* was seen in a local wood on April 14th.—JAMES W. WOOLHOUSE (jun.); Hill House, Frances Street, Chesham, Bucks.

APATURA IRIS IN CORNWALL.—With reference to Mr. Nicholson's interesting notes on *Apatura iris*, one is reminded of a saying of Dr. Johnson: "In discussing exceptions from the course of nature the first question is whether the fact be justly stated. That which is strange is delightful and a pleasing error is not willingly detected". I fear we must ask for first-hand observation from someone trained in the study of Lepidoptera before we can accept records of larvae of *A. iris* feeding on heather in Cornwall or the imago found on flowers of knapweed in September. All collectors have experience of friends who say that they have seen this or that rare butterfly generally in an unlikely place at the wrong time of year. Last year I was assured by a friend that he had seen caterpillars of the Swallow-tail butterfly on bramble in Devonshire. They were, of course, larvae of *Saturnia carpinii*, which bear a superficial resemblance to those of *Papilio machaon*. But it was very difficult to convince my friend of his error, and if a year or two had elapsed it would have been impossible. There is no question of the good faith of Mr. Nicholson's informants, but we may suspect a confusion of memory or inaccuracy of observation to have occurred.—C. N. HUGHES; 78, Harley House, N.W. 1, May 4th, 1933.

[I feel sure Mr. Nicholson agrees.—ED.]

**NISONIADES TAGES, SECOND BROOD.**—It may be of interest to add my record to those in the February–March issues. On August 27th, 1932, I caught a fresh specimen of this species between Bembridge and Sandown in the Isle of Wight.—F. W. J. JACKSON; The Pines, Ashtead, Surrey.

**BUTTERFLIES OF MAIDENHEAD DISTRICT.**—I should be most grateful if anyone who knows this district (say ten miles around Maidenhead), and the butterflies that can be found there, would be good enough to get into touch with me.—ARTHUR VALENTINE; 79, Sutherland Avenue, London, W. 9.

**MOTH-TRAP RECORDS AT EGHAM FOR 1932.**—For the fourth year in succession the moth-trap was in use in the same site and under the same conditions as described in earlier communications. The early months of 1932 were very unpropitious, very little being attracted to the trap. On April 27th one further *Tæniocampa opima* was taken. May was again more unproductive than in previous seasons. The only two species of Prominents noted during the month were *Pheosia dictaeoides* and *Notodonta trepida*, both on May 19th. It was not, however, until June that insects began to wake up. During the prolonged spell of fine weather at this period good "bags" were obtained almost every night. Towards the end of the month *Euchloris pustulata* was once more very much in evidence. 272 insects, comprising 47 species, were recorded during June. July (284 insects, 73 species) was also much better both as regards weather and numbers than in other years, and several *Calymnia pyralina* were taken towards the end of the month.

The first half of August was one of the best periods of the season, the thermometer not falling below 60° F. on 8 out of 17 nights. *Ennomos erosaria* was as usual fairly plentiful. The total bag for August was 219 insects (56 species), recorded on 24 nights. Both September and October were very disappointing compared with most years, very few species of interest being noted. There were, however, several very good nights about the middle of November, on each of which between 30 and 40 *Hybernia defoliaria* were attracted to the light.

To summarize for the year, the trap was tried on 190 nights between February 26th and November 30th. A total of 1128 individuals was recorded—a somewhat larger figure than for the previous seasons. This number comprised 2 Sphingids, 345 Bombyces, 188 Noctuids, 592 Geometrids and 1 Hepialid. 152 species were noted in all, consisting of 2 Sphinges, 21 Bombyces, 50 Noctuae, 78 Geometrae and 1 Hepialus. It is interesting to note the large proportion of Geometers compared with the other groups. *Spilosoma menthastris* was again the most abundant visitor with 110 individuals, next *Hybernia defoliaria* (89), and thirdly *Hipocrita jacobaeae* (78).

The following 13 species were new to the trap; those marked with an asterisk had not been previously recorded in the locality: *Thyatira derasa* (July 24th), \**Palimpestis octogesima* (July 1st),

\**Noctua strigula* (July 5th), *Naenia typica* (July 9th), *Hypena rostralis* (May 15th), *Ortholiha limitata* (July 12th and 28th), \**Lobophora viretata* (August 17th), *Scotosia dubitata* (August 7th), \**Xanthorhoe unangulata* (July 12th), \**Lomaspilis adustata* (August 5th), \**Selenia tetralunaria* (August 5th), \**Boarmia hirtaria* (May 15th), \**Tephrosia punctularia* (June 12th).—CHARLES DE WORMS; Milton Park, Egham, Surrey, March, 1933.

PLUSIA MONETA AT REST.—I reared a good many of these moths from larvae found on larkspur and monkshood in my former garden in Essex, but have not seen it here yet, and have no record, so far, of its occurrence in Cornwall. I may say that those that emerged in my boxes were always *head upwards* and hanging by the front legs, as in Mr. Frohawk's sketch, but, of course, perpendicularly, with the extreme tips of the hind legs, or one only, showing exactly as in the sketch. It may be that newly-emerged moths remain in this position for some time, possibly until their first flight, and afterwards rest head downwards, as C. N. Hawkins says (p. 65), but I have no recollection or note of ever seeing one upside down, and it would be interesting to know whether the one in question was likely to be a newly-emerged one. Was there larkspur or monkshood near the phlox? or had it flown? It would also be interesting to know whether its front legs were extended as in the sketch; in the inverted position the hind legs would *have* to function to support the moth, while in the newly-emerged pose they are little more than stays, the responsibility resting mainly on the extended fore legs.—C. NICHOLSON; Tresillian, Cornwall.

ODONTOSIA CARMELITA AND NOTODONTA TREPIDA.—Freshly-emerged *N. trepida* and *O. carmelita* came in to light here on April 23rd, and the latter again in the day. I have not taken *O. carmelita* before in this district.—B. HAROLD SMITH; Casa, Frensham Vale, Farnham, Surrey.

SWAMMERDAMIA COMPUNCTELLA, HERRICH-SCHÄFFER.—It is a pleasure to be able to add this Tineid to the British list. In working through the genitalia of the genus *Swammerdamia* I found that I possessed some specimens which differed from any recognized British species. An example was sent to Mr. F. N. Pierce, who most kindly took it to South Kensington. Here, with the help of Messrs. G. H. Heath and H. Stringer, the new species was identified with *S. compunctella*, H.-S., the genitalia being strikingly distinctive in the long-pointed valvae and the curiously long divided aedeagus, generally noticeable as a dark projection between the valvae. In appearance the moth closely resembles a pale *S. combinella* without the characteristic coppery apex. In *S. compunctella* the apical fringes alone are coppery. It is best separated from *S. lutarea* and *S. heroldella* by the white dorsum, the large white apical spot and the almost entire absence of the usual central fascia. With these characters compare Stainton's note, *Tineina*, 2: 43, 44, where he seems to have given the name *nebulosella* to a rather melanic *compunctella*. One of

my specimens of the latter lacks the white dorsum and so exactly answers to *nebulosella*, which Stainton says he would otherwise have had no hesitation in identifying with *compunctella*. The males of the other species are easily separable by the genitalia without damaging the specimens. The females are more difficult, but the pads of the ostium are, in *lutarea*, large and angulated; in *caesiella* long and much narrower; in *compunctella* rounded and the spining coarser. The new species seems to be widely distributed and is probably overlooked. I possess seven specimens from Surrey, E. Sussex, Broadstone (Dorset) and Rannoch. In several cases the captures were made amongst birch, which I suspect to be its food-plant.—JOHN W. METCALFE; Stoke Canon, Exeter.

**MOTH EATEN BY BIRD.**—A few days ago a male *Selenia bilunaria*, liberated in bright sunshine in the New Forest, flew up through the boughs of an oak just as a small bird approached. The bird caught the moth with an audible snap, which sounded as if it was caused by its beak. It settled on the oak with the moth clearly visible in its beak, and ate it at once, apparently swallowing wings and all, as they were not seen to drop. Unfortunately I could not identify the bird, as it was against the light, and flew away almost at once. It was about the size of a finch.—F. STANLEY-SMITH (Capt.); Alpha Cottage, Datchworth, Knebworth, Herts, April 20th, 1933.

**PIERIS NAPI EATEN BY A WAGTAIL.**—Whilst sitting on the putting-green here to-day about 3 p.m. I saw a pied wagtail (*Metaculla lugubris*) capture a butterfly (*Pieris napi*). I marked the spot where it alighted, and found all that remained of the butterfly were the two fore wings and half a hind wing; the head and body and the remainder of the wings had been consumed.—ALBERT E. WRIGHT; Brunleigh, Kents Bank Road, Grange-over-Sands, May 10th, 1933.

**EARLY BOMBI.**—On January 6th last, at 3.30 p.m., I was surprised to see a *Bombus terrestris* sucking flowers of *Arbutus unedo* in the garden here, and every day this week I have seen Bombi—*hortorum*, *lucorum* and *terrestris*—flying strongly in garden or fields hereabouts. It has been quite warm and sunny every day since the 3rd inst., and one *hortorum* was at primroses—which have been flowering since November—whilst one *terrestris* had her thorax and abdomen well dusted with pollen, which could scarcely have been primrose.—C. NICHOLSON; March 10th, 1933.

**LIST OF THE BRITISH EPHEMEROPTERA.**—Mr. K. G. Blair tells me that the species described by him and quoted in his list (*Entom.*, 63: 82) as *Rhithrogena fradgleyi* is, in fact, *Rhithrogena haarupi* Esb-Peters., by which name it should be known.—N. D. RILEY.

**CORRECTION.**—In the article on *Aphomia gularis* in Britain in the last issue of the *Entomologist* (66: 99) I omitted to say that the reproductions on Plate I (*recte* Plate II), figs. 8 and 9, are twice the natural size.—S. WAKELY; 8, Woodland Hill, Upper Norwood, S.E. 19.

## RECENT LITERATURE.

*What Butterfly is That? A Guide to the Butterflies of Australia.* By G. A. WATERHOUSE, D.Sc., F.E.S. Pp. viii + 292. 8vo. 34 plates (26 in colour). Sydney: Angus & Robertson, 1933. 12s. 6d.

The first 23 pages of this admirable book deal with general matters, classification, development, variation, distribution, etc., and the last 27 contain the index and many hints on collecting. Amongst the latter there is, rather oddly placed here, a brief account (p. 269) of the relationship of the butterfly fauna to the main vegetational zones, showing how practically all the endemic species are restricted to the Sclerophyll forests along the coasts of New South Wales and Victoria. The remainder of the book is devoted to a very methodical systematic account of the butterflies, the brief description being accompanied by the known distribution and such information as is available concerning the immature stages, food-plants, etc. It is in this last category that the most noticeable advance has been made since the publication, jointly with Lyall, of Dr. Waterhouse's *Butterflies of Australia* in 1914. Indeed, although the author bemoans the numerous lacunæ, the fullness of the data on this subject is quite surprising; it is high testimony to his persistence and devotion to his subject. As already stated, the descriptions of the butterflies are brief, but when the excellence of the coloured plates by Neville Cayley is taken into consideration, it cannot be said that they are inadequate. To many students the provision of keys for the recognition of species would have been welcome, but in a work the appeal of which is largely popular, their absence is readily excusable. Even without a check of this kind it may confidently be said that Dr. Waterhouse will certainly achieve his main object, namely "to enable anyone to identify readily any butterfly he is likely to see in the settled parts of Australia". The provision of popular names for the 339 species described might be deprecated by some; but, since these would inevitably be coined eventually, it is perhaps as well that it has been done at once and by a single author. The plan adopted by Brigadier Evans for the Indian butterflies has been followed, and if it has resulted in a Tindale's Jezebel, and a Tailed Cupid, what does it matter? Of a book so concise, so up-to-date, so sound yet popular, so admirably illustrated and produced, in a sense so final in respect of its main subject, such criticisms as may be made are but trivialities.—N. D. R.

## SOCIETIES.

ENTOMOLOGICAL SOCIETY OF LONDON.—*Wednesday, March 15th, 1933.*—Prof. E. B. Poulton, F.R.S., President, in the Chair.—*Election of Fellows.*—The following were elected Fellows of the Society: Harry Augustine Moonsawmy, Public Health Department, Georgetown, Demerara, British Guiana; Alexander Steven Corbet, Elm Lodge, Earley, Berks; A. R. A. Goseling, Lincoln Hill, Ross-on-Wye, Herefordshire; J. H. Fidler, Warren Side, Mapledurham, near Reading; William George Bainbridge, 200, Skipton Road,

Colne, Lancs ; Rev. E. F. Hemming, B.A., The Vicarage, Manningtree, Essex.—*Exhibits*.—Prof. E. B. Poulton, F.R.S., exhibited and made remarks on (1) the homing of the Noctuid moth, *Calocala electa*, Bkh. ; (2) Dr. Beebe's notes on Lepidoptera attacked by birds in the Galapagos Islands, etc. ; (3) butterflies with injuries probably caused by birds ; (4) a grasshopper (*Acridiidae*) with warning colours, from Madagascar ; and (5) notes by Dr. R. Hanitsch on cockroaches (*Blattidae*) which carry their young. Dr. H. Eltringham, F.R.S., made remarks, illustrated with lantern-slides, on (1) the use of infra-red photography for microphotographic work ; (2) the source of the attractive scent produced by female moths ; and (3) sense-organs in the tarsi of Lepidoptera.—S. A. NEAVE, *Hon. Sec.*

THE SOUTH LONDON ENTOMOLOGICAL SOCIETY.—*February 23rd*, 1933.—Mr. C. M. de Worms, President, in the Chair.—Mr. H. King, D.Sc., of Harrow, was elected a member. Dr. Williams exhibited a bred series of *Spilosoma menthastri* from Edinburgh, and pointed out the deep cream colour of this local form. Mr. E. J. Bunnett read a paper, The Fungus Family, and showed numerous lantern-slides.

*March 9th*.—Mr. T. R. Eagles, Vice-President, in the Chair.—Mr. R. A. Thorpe, of Sydenham, was elected a member.—Mr. Blair exhibited the Dipteron *Lucina fasciata* reared from a sand-hill snail, *Helix pisana*, taken near Tenby ; Dr. Cockayne, series of *Eupithecia arceuthata* and *E. helveticaria* for comparison, noting their differential markings and habits ; Mr. Turner, on behalf of Mr. Siviter Smith, the *esmeralda* form of *Plusia moneta* ; Mr. Thorpe, living larvae of the stag-beetle *Lucanus cervus* ; Mr. Bedford and Mr. Dennis, series of lantern-slides of larvae and wild flowers.

*March 23rd*.—The President in the Chair.—Mr. de Worms exhibited young larvae of *Aporophyla nigra* ; Mr. Ennis, a short series of *Phigalia pedaria* to show the melanic tendency of the species in the Wimbledon area ; Mr. Blair, numerous preserved larvae of Coleoptera to illustrate his paper on the larvae of the Coleoptera.—HY. J. TURNER (*Hon. Editor of Proceedings*).

ENTOMOLOGICAL CLUB.—A meeting of the Entomological Club was held at Caracas, Ditton Hill, on March 16th, 1933, Mr. W. J. Kaye in the Chair. Members present in addition to the Chairman : Mr. Horace Donisthorpe, Prof. E. B. Poulton, Mr. H. Willoughby-Ellis, Mr. Jas. E. Collin. Visitors : Mr. A. Hall, Mr. Hugh Main, Mr. W. Rait-Smith, Dr. Karl Jordan, Dr. E. A. Cockayne, Mr. N. D. Riley, Mr. F. A. Oldaker. The meeting was called for 6.30 p.m., and on arrival the guests were received by Mr. and Mrs. Kaye and their daughters. The Chairman specially showed two drawers of Jamaican butterflies, including his recently described new species and sub-species. A long series of the usually rare *Lucidia cadma* was included. These were all males. Recently Prof. Poulton has received three females, which, although similar to the males, were rather lighter in colour and slightly larger. Supper was served at 8 o'clock, and after a very enjoyable evening the guests dispersed about 11 p.m.—H. W.-E.

# THE ENTOMOLOGIST.

VOL. LXVI.]

JULY, 1933.

[No. 842

## THE LARVAE OF *OPORINIA CHRISTYI* PROUT AND THEIR VARIATION (LEP. GEOMETRIDAE).

BY J. W. HESLOP HARRISON, D.Sc., F.R.S.

As most entomologists interested in the species know, *Oporinia christyi* Prout was described originally as a variety of *O. nebulata* Thunb. (= *dilutata* Bkh.), although its author, as he states elsewhere, had suspicions of its specific distinctness. That these suspicions were justified was proved conclusively in the first place by Allen's\* careful investigations into the biology of *O. christyi*, and, secondly, by Allen and Pierce's† demonstrations that its male genitalia were quite distinct from those of either of its congeners, *O. nebulata* or *O. autumnata*. Allen, however, in discussing its earlier stages confesses in the following words his inability to differentiate between the larvae of *O. christyi* and *O. nebulata* :

"LARVAE.—I cannot distinguish the larva from that of *O. dilutata*. There is the green form without dark markings, and the red or purple form with hardly any suggestion of green, and there are all the intermediate forms, and these may all occur in the same brood. I had once thought I had discovered that the dark markings in *O. christyi*, where they occurred, were always smoky-black and not red. I am now sure that this is not so, for I have had many red-marked *O. christyi* larvae, but I still think that the black-marked form is commoner in *O. christyi* than in *O. dilutata*."

Fourteen years later (1920), in my work‡ on the genetics of the genus, I took up the same position as Allen, and simply supplied the two words "the same" (i. e. as that of *O. nebulata*) as my description of *O. christyi* larvae.

My experience of the species was limited then to broods reared from Enniskillen eggs supplied by Allen, and Cookstown (Tyrone) batches kindly sent by my friend Mr. T. Greer. From this it is clear that Allen and I worked with the same or parallel material—a fact that accounts for the similarity of our results and conclusions. At once it will be asked why this should be, and the answer is simple. Just as *O. christyi*, in harmony with the rest of the *Oporiniæ*, manifests great powers in developing local racial characteristics in

\* Allen, *Ent. Record*, 1906 and 1911.

† Pierce, *Genitalia of the British Geometridæ*, 1914.

‡ Harrison, *Journ. of Genetics*, 9, 1920.



the imago, so it tends to do the same, independently of all imaginal variation, in the larvae. These local larval races appear broadly of two types: (1) those exhibiting a preponderance of green forms, the greens being either "selfs" or marked to some extent with brown; and (2) those displaying a garb of deep brownish red, with or without the presence of some green. If one works with the Irish races then, according to my experience, the former group is encountered. In these strains, except for a slightly darker head and their somewhat inferior size, the green forms cannot be distinguished from the corresponding *nebulata* forms. The brown-marked specimens, whilst possessing the same dark head, vary so much in the extent and depth of their brown that, remembering solely the great variability of *nebulata* larvae, one regards them as possible variants, not even very remarkable, of that species.

Such, then, was the position when, a few years ago, I discovered *O. christyi* in tolerable abundance in woods in the west of Northumberland and Durham. This discovery, naturally, caused me to pursue the study of the species with renewed zeal. The first colony submitted to examination lies along the Devil's Water, south-west of Corbridge, Northumberland. Curiously enough, although the imagines here depart more widely from the Scotch and Irish types than any others I have seen, the range of larval variation is of the same order as obtains in northern Irish stations. This, combined with the fact that *nebulata* and *autumnata* larvae were being beaten at the same time, masked the meaning of certain "self" red forms which were taken.

Next year, armed with the knowledge of the type of habitat the species requires, I tested the possibilities of the upper waters of the Derwent and the West Allen, and was equally successful. Further, very fortunately, one of the stations on the Allen produced a majority of red forms. Then, although again both *O. nebulata* and *O. autumnata* were being beaten, the significance of the red-brown markings was realized. Whenever I beat a red-brown larva it fell from wych elm, and whenever the larva was purplish it came from oak. In other words, combining these facts with my breeding results from the Devil's Water lot, it was perfectly obvious that a brownish-red ornamentation, both extreme and slight, characterized *O. christyi* larvae, and a purplish pattern *O. nebulata*. Subsequently, re-visiting the Sneap and the Devil's Water, I was able to differentiate larvae of the two species as they fell, and to point out their distinguishing features to friends working with me.

As already stated, the larvae may be divided into two main groups, one found in stations where "reds" predominate and the second where "greens" prevail. These two groups vary greatly

within their limits, and it is proposed to describe very briefly each group and its variation.

### GROUP I : THE RED FORMS.

In its most typical guise the red-brown variety bears much the same relation to the green as the two forms of the larva of *Hadena pisi* bear to one another. The ground-colour is a rich carmine, somewhat brownish tinged, with a broad white spiracular stripe. The subdorsal, supraspiracular and subspiracular stripes are palish, as are also the primary tubercles. Ventrally, below the spiracular stripe the ground is again carmine brown, but the median area is broadly white. The abdominal segmental incisions, but not the thoracic, are greenish. The head is of a dull olive green, the legs, and the prolegs posteriorly, being of the same colour. Anteriorly the prolegs are reddish, as is also the anal plate. The prothoracic plate is a bright carmine, and the spiracles a dark brown.

Although such larvae were regarded as the central forms of the red group, there were other "self" forms obviously derived from, or dependent on, these. Such were blackish green, brownish green, light olive, drab, light drab, and cinnamon in the ground-colour. Amongst this series the most noteworthy coloration was the first. In many of its manifestations it rendered the larva absolutely indistinguishable from that of *O. filigrammaria*—a very remarkable fact, probably of great phylogenetic significance.

### GROUP II : THE GREEN FORMS.

The ordinary green examples, except in the honey-coloured head, so closely resemble those typical of *nebulata* that any description is superfluous, but one phase of variation here seems noteworthy. Although *O. christyi* is almost exclusively a wych elm feeder here, at one point on the Sueap it passes to *Salix caprea*. On that pabulum, like the larva of *O. nebulata*, *christyi* larvae become whitish or bluish green in response to the influence of the whitish undersides of the willow leaves.

The green examples, however, may be marked with brown blotches or with others which, to the naked eye, seem smoky black. Under a lens the latter hue resolves itself into a peculiar brown. Analysis of the variation of the brown-patterned larvae appears quite unnecessary when it is made clear that the distribution of the brown markings on the larvae follows, for the most part, that of the purple on the parallel *nebulata* larvae.

To prevent misunderstanding, it should be emphasized that, although a definite variation range "hall-marks" each colony, even

in one in which 80% brown-red "selfs" occur, wholly green larvae are to be found, and *vice versa*.

The facts just recounted amply support the conclusion, derived from other morphological and biological considerations, that in *O. christyi* we are dealing with a species abundantly distinct at all stages from *O. nebulata*. To this evidence again I can add corroboration yielded by a cytological examination of the larval gonads of *christyi* males. In *O. nebulata* the haploid chromosome number is 30, whilst in *O. christyi* the haploid complement is 31.

**EARLY BUTTERFLIES.**—The following early dates may be of interest: *Pararge aegeria* and *Euchloë cardamines* on April 6th, and both flying plentifully by April 14th; *Brenthis euphrosyne*, *Pararge megera* and *Coenonympha pamphilus* on April 30th; and also noted one or two *Epinephele jurtina* to-day (June 8th), which seems to me rather early.—F. A. LEEDS; Edenhurst, Ross-on-Wye.

**EARLY BUTTERFLIES.**—This seems a remarkably early season for most things. *Thymelicus linea* was seen the last week in May, together with *Agriades sylvanus*, and this first week in June it is quite plentiful. I have not taken it previously until towards end of July.—JAMES W. WOOLHOUSE (jun.); Hill House, Frances Street, Chesham, Bucks, June 7th, 1933.

**EARLY EMERGENCES OF RHOPALOCERA.**—The undermentioned dates seem to be particularly early: *Pieris rapae*, March 22nd; *P. brassicae*, March 25th; *Cyaniris argiolus*, April 6th; *Euchloë cardamines* and *Pararge megera* (the latter by report only), April 8th. This locality is, however, very sheltered, on the southern slopes of a high hill. Probably when we return to normal English spring weather they will all be killed off.—J. B. G. TULLOCH (Brig.-General); Hill Court, Abergavenny.

**EARLY EMERGENCE OF AGRION PULCHELLUM.**—On Saturday, April 8th, I found a female *Agrion pulchellum* fully developed in a cage of net (or some such material) over a small tank in which I had kept (with others) this nymph for some months. In the wild state this would be a very early emergence, but in the bed-room in which this aquarium is kept a gas-fire is often used; not often or continuously enough to justify describing this emergence as forced, but undoubtedly it would be sensibly accelerated. But I think April 8th is early for emergence in any case. I have been rearing dragonflies from the nymph (or naiad) for over twenty years and April 23rd is the earliest emergence I had noted until now, and that was an isolated case. That nymph was a *Pyrrosoma nymphula* and was kept in a tank in a cold greenhouse. In case anyone (quite naturally) should be sceptical of my identification of *A. pulchellum*, I will add that Mr. Kimmins, of the British Museum (Nat. Hist.), kindly named the specimen for me.—HAROLD HODGE; 9, Highbury Place, N. 5, April 11th, 1933.

## BRITISH GALL-CAUSING CYNIPIDAE: SOME NOTES ON THEIR EMERGENCES.

BY M. NIBLETT.

THE following notes are compiled from personal observations made during the past eight years, following my attempts to rear these insects from their galls. I have had varying success, and have bred out 47 species from the total number of 88 known to occur in Britain. A few species I have as yet failed to rear after repeated efforts; of many I have not had the galls in sufficient numbers, or have not had any at all. There appears to have been very little published in British entomological journals during recent years in reference to the insects of this family, so possibly these recent records for Britain may prove of interest.

I have thought it advisable to refer to the parasites and inquilines also bred from the galls, but as I am not competent to determine the majority of these species, and it seems practically impossible to get any number identified in this country, I can only give the names in a few cases. All the galls from which the following insects were bred were kept in an unheated wooden shed, moisture being supplied when thought necessary.

*Rhodites rosae*, L., emerged from May 28th to July 8th of second year; the inquiline *Periclistus brandti*, Ratz., during June; the ichneumon *Orthopelma luteolator*, Grav., May 2nd to July 8th, and numerous Chalcids from May 2nd to August 11th; and in May of the following year a number of Chalcids, probably *Oligosthenus stigma*, Fab. At the end of April, 1931, a number of midge larvae emerged from galls of the previous year, going down into earth to pupate; on May 14th a number of Cecidomyids (at present unidentified) emerged; this is the only occasion on which I have bred inquiline Cecidomyids from *Rhodites* galls, and can find no record of them occurring there.

*R. eglanterae*, Htg.—All the gall wasps of this species which I have bred have emerged in May of the second year, being followed by numerous *Periclistus caninae*, Htg., in June; a few Chalcids have also emerged in that month.

*R. nervosus*, Curt.—This species I have failed to breed, all the galls I have had yielding only *Periclistus caninae*, Htg.

*R. spinosissimae*, Gir.—This also I have failed with, inquilines only emerging, in abundance.

*R. mayri*, Schl.—All emerged in June, second year, except in one instance, when one specimen came out in August. Chalcids emerged during June also, while from old galls Chalcids emerged from mid-July to early October of third year, being apparently the

same species as that bred from *R. rosae* galls in third year, i. e. *Oligosthenus stigma*, Fab.

*Diastrophus rubi*, Bouché.—This gall has, up to the present, yielded only Chalcids. 70 emerging during July of second year, from one gall.

*Xestophanes potentillae*, Vill., I find emerges in June.

*X. brevitarsis*, Thoms., I have had emerge from mid-May to the beginning of June. second year, Chalcids emerging in considerable numbers during June of same year.

*Aylax papaveris*, Per.—There emerged from the end of April to the beginning of July, second year, from very much swollen seed-capsules of *Papaver rheas*, L., a series of this Cynipid. and from the end of April to mid-June a series from capsules which showed practically no signs of swelling or distortion. The latter should be, according to Cameron, *Aylax minor*, Cam., but I am unable to separate them. There is considerable variation, both in size and colour, even in insects emerging from the same capsules. Numerous Chalcids emerged during the same period as the Cynipids, and these included a series of apterous specimens.

*Liposthenes latreilli*, Kieff.—This is another species I have failed to rear, all the emergences from the many galls I have kept being Chalcids; some of these emerged in the September of first year, others in the following March and June.

*Isocolus rogenhoferi*, Wachtl. emerged in June and July, and numerous Chalcids in May. June and July: both Cynipids and Chalcids emerged in second year, but I have found many of the galls in September of first year, with emergence holes in them.

*I. jaceae*, Schrnk., I have had emerge usually in June, second year, but in several instances the insects emerged in August; all that I have bred have been from the achenes of *Centaurea nigra*, L. I have not yet bred it from those of *C. scabiosa*, L.

*Aulacidea hypocheridis*, Kieff.—This species emerged from June 8th to July 8th of second year; it appears to be heavily attacked by parasites, three times as many Chalcids as gall-wasps usually emerging.

*A. hieracii*, Bouché.—This species also suffers considerably from the attacks of parasites, two galls yielding, during May and June of second year, 70 Chalcids and 24 *A. hieracii*.

Coming next to the species of *Cynipidae* affecting the oak (*Quercus*), it is rather interesting to compare the times of emergence as given by different observers. The records of Continental observers to which I have had access do not differ very much from my own observations, it appearing that generally each species emerges at about the same time of year, whether it inhabits Austria, Portugal or more northerly areas.

The records of Tavares for Portugal give a few instances of earlier dates, but the majority agree with those of this country and of North Germany. These records I shall only refer to where they differ in any degree from my own observations. I can find but few records of captured insects, some of which I will refer to.

*Cynips kollari*, Htg.—This species varies its time of emergence considerably: August and September of first year appears to be the normal time, but I have had them emerge in October of first and June, July and August of second year. Adler gave May of second year also. Synergi emerge in considerable numbers from these galls, particularly from undersized specimens. I have had them out in April, May, June and July of second year, and in March of third. Chalcids in April, May and June of second year; and in one instance several ichneumons emerged in May of second year.

*Biorrhiza pallida*, Oliv., emerges in June and July of first year, synergi in the same months, while all the Chalcids I have bred have emerged in March, April, May and June of the second year.

*B. aptera*, Fabr., emerged in November and December of first year, with Chalcids in August and October of the second.

*Trigonaspis megaptera*, Panz., emerged in June and July of first year, with a few synergi in the latter month.

*Diplolepis taschenbergi*, Schl.—All out during May of first year.

*D. quercus-foli*, L.—All those that I have bred have emerged in January second year. Adler gave December to March; and Mayr, September to December for this species.

*D. longiventris*, Htg.—This species I have had emerge in January of the second year, and from the same batch of galls several came out in the following December. It has also emerged in March of second year. Cameron gave October; Mayr, December; Adler, November and December; and Schlechtendal, August to October of first year.

*D. divisa*, Htg., emerged in November of first and January of second year. The only variation from these dates is a record of Fitch, who gave April of second year.

*D. disticha*, Htg.—This species emerged in October and November of first year, preceded by synergi and Chalcids in August, Chalcids also emerging in April and May second year.

*Andricus radicus*, Fabr.—I have had this species emerge in March of second and April of third year. Large numbers of synergi were also bred in April, May, June and October of second year, and some in April and May of third.

*A. gemmatus*, Adler.—Emerged in June of first year.

*A. quercus-corticis*, Htg.—This species came out in May and July of second year. I have also captured it on oak in June.

Synergi emerged in June and July, and Chalcids in May and June second year. Claude Morley's record of its capture in March is an exceptionally early date.

*A. sieboldi*, Htg., emerged in April second year, followed by synergi in May. This species Morley also records as having been taken in March.

*A. inflator*, Htg., emerged in June of first year, and synergi in May, June and July.

*A. globuli*, Htg.—This species emerged in January of third year. There appears to be considerable variation in the recorded times of emergence; Cameron gave April of third, Hartig February, with no year, Adler March and April of third and fourth, whilst Tavares gives October of first and spring of second and third.

*A. curator*, Htg., emerged in June and July of first year.

*A. collaris*, Htg., came out in March and April of third year.

*A. fecundatrix*, Htg.—This species emerged in October of first and March of second year. Synergi in August and September of first, and April and June of second.

*A. cirratus*, Adler, emerged in June of first year.

*A. quadrilineatus*, Htg.—From the same batch of galls this species emerged in March of second and third years. Synergi in June and July of first, and Chalcids about the same time.

*A. albopunctata*, Schl.—I have been unable to breed out this species up to the present, the galls yielding nothing but synergi in June and July of first year. Schlechtendal gave November of first, while Adler gave April of second and third years as the time of emergence. The galls of this species are frequently packed full with inquiline larvae, each separated from the next by a septum; there may be five or six in a gall, but in nearly every instance the imagines come out through the emergence hole made by the first insect to emerge, evidently taking the line of least resistance.

*A. glandulae*, Schnk., emerged in April of second year, synergi in September of first and April of second, Chalcids in June of second.

*A. furunculus*, Bey., emerged in May of first year. I have also captured it in June.

*A. ostreus*, Gir.—The majority of insects emerge from October to December of first year, but I have had a few come out in March of the following year. Synergi emerged in August, September, October and November of first, and in April and May of second year. Chalcids in September and October of first year; March, April, May and August of second.

*A. quercus-ramuli*, L., emerged in June and July of first year; synergi at the same period, followed by Chalcids in October.

*A. solitarius*, Fonsc.—I have tried to breed this insect for a number of years, but have never yet obtained a specimen that I

could confidently refer to this species. The insects emerging in August, September and October of first year are, as far as I can determine, synergi. Mayr gave September as its time of emergence, but I do not think he ever had the insect, assuming that that was the time, as he found galls with emergence holes in them during that month. Tavares gives October and November of first year as the time of emergence.

*Neuroterus tricolor*, Htg., emerged in July, and synergi in the same month, Chalcids coming out in April of second year. Tavares gives May as the time of emergence.

*N. fumipennis*, Htg., emerged in April and May of second year.

*N. albipes*, Schnk., came out in May first year, and Chalcids in August.

*N. lacviusculus*, Schnk., emerged in February and March of second year, Chalcids in April, May, June and August of second. I have also bred Cecidomyids (probably *Xenodiplosis lacviusculi*, Rûbs.) in July of second year from the galls.

*N. baccarum*, L., came out in May and June, synergi in August, Chalcids in May, July and August: all in first year.

*N. lenticularis*, Oliv., emerged in February of second year.

*N. vesicatrix*, Schl., emerged in May and June of first year.

*N. numismatis*, Oliv., emerged in March of second year.

*N. aprilmus*, Gir., came out in April of first year.

*Callirhytes glandium*, Gir., emerged in March and April of third year, and April of the fourth, fifth and sixth years. Cecidomyids, the orange-red coloured larvae of which lived between the acorn and cup, emerged in July and August of second year. I have only found the larvae of this midge affecting the galled acorns. It is probably No. 379 of Messrs. Bagnall and Heslop Harrison.

Two species have been bred from catkin galls from *Quercus sessiliflora*, Salisb., and one species from galls from *Quercus cerris*, L.; these have not yet been satisfactorily determined.

It would appear that there is still much interesting investigation to be done in this group of insects. There are still problems to be solved in connection with the possibility of alternating generations of some of the oak-inhabiting Cynipidae; and many more relating to the probability of alternate hosts of the inquiline and parasites of this group of insects.

10, Greenway,  
Wallington, Surrey.

GYNANDROUS EUCHLOE CARDAMINES.—On May 20th, 1933, I took locally a gynandrous specimen of *cardamines*, in perfect condition, left wing true female coloration, right wing typically male.—F. DENE GREENWOOD; Farm Lodge, Edenbridge, Kent.



TWO NEW SOUTH AFRICAN SPECIES OF *DIXA* (DIPTERA).

By H. G. Wood, B.A.

(With 4 figures.)

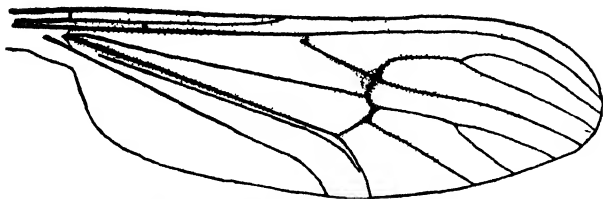
THESE species of *Dixa* are unique in the fact that they are the first recorded specimens from the S.W. area of the Cape Province. In agreement with Edwards (*Diptera Patagonia and South Chile*, Part II, fascicle 3, 1930), the subfamily Dixinae is herein regarded as belonging to the family Culicidae.

I am deeply indebted to Dr. K. H. Barnard for the use of the literature in the South African Museum, Cape Town, and for his assistance and suggestions.

Both species are described from fresh material in alcohol.

***Dixa (Paradixa) capensis*, sp. n.**

♂. *Head* deep sepia brown, eyes black; rostrum lighter brown above and below, paler laterally. Palpi blackish, last segment elongate, twice as long as the preceding segment. Antennae elongate, approximately half length of specimen. Two basal segments ("scape") swollen, dark brown, the second segment globular, longer than the first, flagellum paler, slender, elongate, filiform, the first six segments distinct; first flagellar segment scarcely swollen, twice as long as second segment, six to seven times as long as broad. *Thorax* with brownish ground-colour. Mesonotum with three dark stripes, median one tapering from anterior margin caudally as far as the centre of sclerite, hind median surface lighter in colour; lateral stripes crescent-shaped, curved outwards and downwards and blackened at anterior end, meeting margin in front and behind. Scutellum fuscous brown, anterior margin black; postnotum entirely fuscous brown, median anterior part with small whitish triangular mark, posterior margin with minute median notch, the margin of lobes black. Pleurae dark, fuscous brown, darkened along anterior margins. Legs with fore coxae fuscous brown, paler behind. Second and third coxae white; trochanters tinted with fuscous brown, anterior median surfaces with black mark; rest of leg darkened; proximal ends of femora pale; posterior tibiae swollen at tip, but scarcely blackened; claws with four teeth, subequal. *Wings* with faint greyish tinge, veins brownish, faint dusky seam at fork of Rs and along r-m crossvein. Sc<sub>1</sub> ending before origin of Rs at a distance equal to r-m; Sc<sub>2</sub> far removed from its tip, a little proximal to centre of the distance along radius from wing root to origin of Rs; Rs short, three times length of r-m, spurred at its origin; r-m connected with Rs at its fork; cell R<sub>4</sub> longer than its petiole; m-cu slightly smaller than r-m; cell M<sub>2</sub> slightly less than its petiole. Halteres with knobs fuscous brown, stems paler. *Abdomen* darkened apically. Tergites fuscous brown spotted with black markings; sternites



paler, without markings; pleurites dark, giving rise to dark lateral stripe along abdomen. Hypopygium small, black; ninth tergite simple; anal lobe fleshy, with a small pubescent lobe on each side of median line. Ninth pleurite at most with pubescent apical lobe on inner margin. Pleural appendage slender, fleshy, slightly curved, with numerous delicate hairs; aedeagus in poor condition, without any processes or appendages, slightly chitinated.

♀. Larger, but otherwise similar to male; genital valves fleshy, produced slightly ventrally but otherwise display very little development.

*Length*.—♂ 3.5 mm., ♀ 4.2 mm.; wing, ♂ 3.5 mm., ♀ 4.25 mm.; antenna, ♂ 2.0 mm., ♀ 2.15–2.20 mm.

*Habitat*.—Along shady banks of small streams; French Hoek, Cape Province, altitude 2500–3600 ft., October 1st, 1932 (H. G. Wood). Holotype male and female in S. A. Museum.

The other Ethiopian species of *Dixa*, *Dixa camerounensis*, Alex., and *Dixa katangae*, Alex. (*Rev. Zool. Bot. Afr.*, 16, part 1, 1928), and *Dixa lunata*, Edwards (*Entom.*, 62, 1929), have r-m crossvein joining R<sub>5</sub> just beyond fork of Rs.\* In both male and female of *Dixa capensis* the r-m crossvein is at the fork of RS. *Dixa capensis* belongs to the sub-genus *Paradixa*, Tonnoir (*Rec. Cant. Mus.*, 2, No. 4, 1924), in that the antennae are elongate, exceeding the head and thorax; joints of antennae are elongate, filiform, and with first flagellar segment cylindrical, at least six times as long as broad; r-m crossvein at fork of RS. Vein M is hairy to near the base, thus resembling the New Zealand species. The male hypopygium resembles that of subgenus *Dixa* by having coxite without terminal styliform process, at most with a small pubescent apical lobe.

### ***Dixa (Paradixa) bicolor*, sp. n.**

♀. *Head* blackish-brown with ring of yellow surrounding base of antennae; eyes black; rostrum yellow above, paler laterally and below. Palpi blackish, last segment moderately elongate, one-half as long again as the preceding segment. Antennae elongate, one-half length of specimen; scape swollen, black, second segment globular; flagellum pale brown, similar to that of *Dixa (Paradixa) capensis*. *Thorax*: Mesonotum yellow, with a definite pattern in the form of three black prongs, which are confluent anteriorly. Lateral prongs straight, meeting anterior and posterior margins of mesonotum; width of single prong slightly subequal to width of median yellow portion of mesonotum; median prong tongue-shaped, projecting from anterior margin of mesonotum; one-half as long as lateral prongs, with a thin obscure yellow stripe along median line.

\* This distinction noted by Mr. Wood is probably a matter of individual variation. The new species is evidently closely related to *D. lunata*, Edw., of Nyasaland, differing in the form of the style or "pleural appendage" of hypopygium.—F. W. EDWARDS.

Scutellum yellow, slightly darkened along caudal margin, much darkened laterally to form a round black spot at the sides of scutellum. Postnotum rounded caudally, dark fuscous brown with posterior margin black; anterior margin incised slightly on median line. Pleurae yellow; entire mesosternum, lower portions of mesepisternum and mesepimeron tinted sepia brown, causing side of thorax to possess a distinct sepia brown band. Legs with coxae and trochanters pale fuscous brown, remainder of legs darker; tips of femora and tibiae black; posterior tibiae swollen at tips; claws with six teeth, subequal, especially inner tooth. *Wings* with dense short microscopic pubescence, veins yellow, distinct dusky seam at fork of Rs, along basal deflection of  $R_{4+5}$ , r-m and m-cu crossveins, produced slightly along  $R_{2+3}$  and  $R_{4+5}$ , and along Cu for two-thirds of its length.  $Sc_1$  ending before origin of Rs, this distance subequal to basal deflection of  $R_{4+5}$ ; Rs short, four times length of r-m crossvein, angulated at origin; Rs and basal deflection of  $R_{4+5}$  much thickened; cell  $R_1$  longer than its petiole; m-cu and r-m crossveins equal in length; basal deflection of  $R_{4+5}$  slightly less than r-m; r-m placed before fork of RS on  $R_{4+5}$ ; cell  $M_2$  one-half length of its petiole. *Halteres* with knobs fuscous brown, stems paler. *Abdomen* yellow, paler laterally. Tergites spotted with dark markings, sternites darkened slightly near anterior margins. Genital valves of ♀ similar to those of *Dixa* (*Paradixa*) *capensis*.

♂. Smaller, darker than ♀; abdomen darker and more mottled; wing with dusky same less distinct, prominent chiefly at fork of Rs and r-m crossvein. Hypopygium small, black; ninth tergite simple; ninth sternite with ventral pubescent lobe on the posterior lateral margin; ninth pleurite short and stout, without an apical lobe on inner dorsal surface; dorso-lateral base of pleurite prolonged into a membranous tapering lobe bent ventrally at right angles to length of abdomen, with a chitinized hook at its tip; dorsal and ventral inner basal margins of pleurites give rise to a broad membranous cup with a wide, deep, dorsal, U-shaped notch, tips being bent downwards; pleural appendage short, thumb-like, blunt, with numerous delicate hairs; penis strongly chitinized, resembling a short open tuning-fork.

*Length*.—♂ 3 mm., ♀ 4 mm.; wing, ♂ 3 mm., ♀ 4 mm.; antenna, ♂ 1.6 mm., ♀ 2 mm.

*Habitat*.—Sneeuwgat, Winterhoek Mts., Tulbagh, Cape; altitude 4000 ft. November 1st–4th, 1932 (*Dr. K. H. Barnard and H. G. Wood*).

Types in the S.A. Museum.

Found on the vertical and inclined mossy surfaces beneath small overhangs on the edges of streams. The body is held away from, and horizontal to, the mossy surfaces, wings being folded lengthwise over the abdomen.

This species of *Dixa* is easily separated from *Dixa* (*Paradixa*) *capensis* by the distinct black and yellow pattern of the mesonotum, by the wing venation and by the male genitalia.

## NOTES ON BRACONIDAE: XIV.—ALYSIIDES.

By CLAUDE MORLEY, F.R.E.S., F.G.S., F.Z.S.

(Continued from p. 138.)

17. *A. tipulae*, Scop.—Taken singly from June to September at Brandon and on Monks Soham house-windows in Suffolk, Hurst-hill and Denny Wood in the New Forest, with the var. *abdom. med. ruf.* at Wilverley there, and both sexes at Innisfallen and Muckcross in Killarney; a male at Greenings in Surrey in 1871 (W. Saunders), Lichfield (Carr); but we have not advanced from Marshall's supposititious parasitism upon larvae of fungivorous *Mycetophilidae*. Perris found it (*Ann. Soc. Ent. France*, 1872, p. 71) to attack the Trypetid fly, *Urophora centaureae*.

18, 19. *A. sophia*, Hal.—Still consists of the unique Irish type; and I have but once found *A. incongrua*, Nees, that was known with us from Edinburgh and Plymouth only—at my Monks Soham house-windows on August 6th, 1924.

20. *A. lucicola*, Hal.—Doubtless sufficiently common when looked for; it was described from "*circa fungos*", and late in September, 1897, several females occurred to me in the fungi of old trees at both Bramford and Foxhall near Ipswich, but none seen later.

21. *Tanycarpa ancilla*, Hal.—Once taken in an osier-bed at Barton Mills, Suffolk, in mid-June.

22, 23. *T. rufinotata*, Hal.—Known in England and Ireland, among fungi I have not seen; but *T. gracilicornis*, Hal., has occasionally turned up in the Fen-marshes about Brandon staunch in early June of 1914 and 1929. Bred in Italy from *Agromyza cicerinae*, Rondani.

24–26. *Pentapleura* is a genus unrepresented in my collection; its first two species, *P. angustula*, Hal., and *fuliginosa*, Hal.,\* appear rare, but the third, *P. pumilio*, Nees, is asserted to be "common in England and Ireland, in pratis humidis aestate frequens".

27, 28. *Idiasta maritima*, Hal.—Not rare, though doubtless local; known only from beneath *Fucus*-seaweed in North Ireland, York(shire?), Hants, Lymington salterns and Dulwich (not the Hebrides). On September 1st, 1911, I saw a male walking over mud in Covehithe Broad, Suffolk; and two years later took many females on September 17th–20th, at Southwold, four miles further south, when I noted: "They were sitting head outwards beneath

\* *P. fuliginosa* has been, doubtless erroneously, given as parasitic upon the Weevils *Boris laticollis*, Msh., *B. chlorizans*, Germ., and *B. cuprirostris*, F. (Edouard Perris: Hist. Metamorph. Diver. Insectes, in *Mém. Soc. Roy. Liège*, 1855).

branches of *Sueda maritima*, Dum., growing on bare sand of the Buss Creek, just above high-water mark at one spot only. Gently patting the plant caused them to bolt; or, upon a branch being lifted from the sand, the insect whirls away for about 18 inches, and also part of the way back, semicircularly, boomerang-fashion—much resembling the gyrations of the Sandhoppers, *Talitrus locusta*, L., which occur with it—but after alighting, it considers it has shot its bolt, remains more or less quiescent, and may easily be secured. The only things of proportionate size for hosts, found in its immediate vicinity, were the ubiquitous *Scatophaga litorea*, Fln., and Limnobiid *Symplecta similis*, Mg., though *Platycephala planifrons* and *umbraculata*, F., were quite near. None was found elsewhere in the district, or except upon the Sea Blite”. To my merely suggested parasitism upon *Platycephala* or *Ephydra riparia*, Fln. (*Entom.*, 1912, p. 155), Mr. E. A. Newbery adds a possible beetle by sending me a female, taken at Dovercourt in Essex, during June, 1911, “in borings of *Bledius arenarius*, Payk., in shore sand”. Of Haliday’s other species, *I. nephela*, from the Hebrides, I know nothing; nor has it been captured since 1838, excepting in Finmark.

29. *Aphaereta major*, Marsh.—Females have been taken at Gretna in Scotland on June 1st, 1929 (Murray): in flood-refuse at Bubwith in Yorks (Newbery); and by sweeping a wet and grassy ditch at Mildenhall, Suffolk, on September 25th, 1907.

30. *A. cephalotes*, Hal.—Abundant from June to September: Batten, Plymouth (Keys); Felden, Herts (Piffard); Brighton, Sussex (Elliott); Lymington salterns, Hants; and in Suffolk at Oulton Broad, Pakefield cliff, Monks Soham, and on July 25th, 1900, ovipositing in dipterous larvae upon *excretum hominis* on shore at base of Southwold cliff—var. *inepta*, nov. Newbery has given me a brachypterous form of this female, differing from the typical one in no way but the alar structure: though the wings are but slightly smaller, their neuration is reduced to the costal margin and median nervure; besides these, only the anal nervure is visible, running up in an even curve through the recurrent to the cubital nervure, which fades just beyond the very short second transverse cubital, whereat the entire radial nervure is obtusely angled. Crowthorne, Berks, September, 1917.

Dr. Joseph Etienne Giraud’s *Liste des éclosions d’Insectes* shows that he bred this species both from the Anthomyid, *Anthomyia spreta* on the fungus, *Spaheria (Dothidea) typhina*, Pers., and from a Tachinid-fly of the genus *Sarcophaga*, under which is noticed that “M. Perris a obtenu assez souvent, comme parasite d’une *Sarcophaga* des excréments humains, le Figites scutellaris, ainsi que l’*Alysia cephalotes*” (*Ann. Soc. Ent. France*, 1877, 7: 415).

31. *A. debilitata*, sp. nov.—♂: This insect differs from *A. cephalotes* in no more than three particulars, and I am enabled to ascribe it to the present genus by the exact similarity of both the corporeal and pedal structures. The peculiar inflation of the hind tibiae is precisely here reproduced. (1) The antennae are of but eighteen joints; (2) the body-length varies from 1 to  $1\frac{1}{4}$  mm. only; and (3) the wings are so far aborted as to extend hardly to the abdominal apex; they are linear, bear no stigma, and merely a very few irregular and obsolete nervures. ♀ only: I took a half-dozen specimens on July 17th, 1912, when they were by no means rare, walking upon damp mud, among *Atriplex portulacoides* and *Sueda maritima*, near the sea at Covehithe Broad on the Suffolk coast.

32. *Phaenocarpa pullata*, Hal.—Doubtless quite common with us, though accounted rare in Ireland: several at Gosfield in Essex, in May, 1902 (Beaumont), at Shere in Surrey (Capron), and Lichfield in Staffs (Carr); on water of horse-trough in Ipswich, beaten from birch in Assington Thicks, on water-weeds at Whitton, and in hedge at Bramford, Suffolk, April 25th to May 13th only. Economy still unknown, but association with water is obvious, and the restricted span of perfect life most unusual among Parasitica; Haliday found it, however, in June.

33. *P. punctigera*, Hal.—“*Hiberniam borealem*,—unicum exemplar (♀) pridem mihi lectum asservatur in Mus. Clm. Curtisii,” says Haliday, in describing this female; so we may suppose the unique specimen to be now in Australia. But a second female occurred to me on a Monks Soham window-pane on June 28th, 1927.

34. *P. tabida*, Nees.—Two females at the exuding sap on bole of a chestnut-tree near Browns Hill at Painswick in Glos. on September 6th, 1893 (Watkins); and a male swept by the Tay at Birnam in Perth on August 20th, 1907 (Elliott).

35. *P. picinervis*, Hal.—Certainly quite common from June to September in marshes: Greenings in Surrey (W. Saunders); Colchester garden (Harwood); and in Suffolk at Ashfield (Elliott), Tostock (Tuck), Barton Mills, Beccles, Freston, etc., by me, to whom it occurred on June 17th, 1913, at Killaloe in Ireland.

36. *P. eugenia*, Hal.—This beautiful insect, known only and singly from North Ireland, Cornwall and near London, is usually found sitting upon bracken upon dry heaths; in such a situation several have been taken by me at Foxhall and Walberswick, Suffolk, during mid-September. I suspect it of emerging from fungivorous Diptera upon the adjacent pine-trees.

37. *P. ruficeps*, Nees.—The most prevalent of the genus in Britain, where its habits, if not hosts, are well known; bred parasitically from the larvae of such diverse flies as the Anthomyid, *Anthomyia radicum*, L., the Lonchaeid, *Lonchaea vaginalis*, Fln.,

and the Piophilid *Piophila casei*, L. (Marshall, 1894). Surrey (Saunders), Herts (Piffard), Helpston Heath in Northants (Elliott), Lichfield in Staffs (Carr), Taynuilt in Scotland on September 11th, 1894 (Beaumont); in Suffolk from May 27th to August 24th, and both sexes at Killarney in Ireland on June 7th, 1913.

38. *P. maria*, Hal.—By no means “very rare, ♂ unknown”. I possess both sexes from Greenings in Surrey (Saunders), Felden in Herts (Piffard), and several Suffolk localities, such as Southwold and Halesworth from July 5th to September 16th. The *undescribed* male is just under 3 mm. in length, and similar to that of *P. livida*, but with the typically elongate second cubital cell and an alar expanse of less than 5 mm.

39, 40. *P. galatea*, Hal., remains unique from sallow on a sandy shore near Dublin. But *P. conspurcator*, Hal., is abundant everywhere: “females may be often seen on dunghills and the droppings of cattle in fields, seeking for the larvae of *Scatophaga* and other flies” (Marshall, 1894). I. of Wight (Morey) and Newport there (Newbery), Surrey (Capron), Herts (Piffard), Castor in Northants (Elliott), Lichfield in Staffs (Carr), Boston and Market Rasen in Lincs, Diss in Norfolk: and in Suffolk at Wherstead (under *stercus canis* on October 10th, 1896), Foxhall, Oulton Broad, Barton Mills, Mildenhall and Brandon, from June 4th to October.

41. *P. pratellae*, Curt.—Known to frequent fungi. Females at Tatsfield in Surrey, June, 1915; and several on August 15th, 1915, in the same ground-fungus as both *Necrophori* and dipterous larvae at Banchory in Scotland (Elliott).

42. *P. flavipes*, Hal.—A fairly common kind: Enniscorthy in Ireland (Beaumont), Surrey, Herts, Suffolk from late August to late September only. On August 27th, 1920, it was very numerous, flying around and settling upon Agarics in Shrubland Park.

43-45. *P. livida*, Hal.—Fully as prevalent as the last species, from June to August. I. of Wight (Morey), Surrey (Saunders), Herts (Piffard), Tralee in Ireland on June 14th, 1913, and all over Suffolk; sometimes upon my house-windows at Monks Soham. *P. nina* and *cunice*, Hal., I have not seen.

(To be continued.)

## NOTES AND OBSERVATIONS.

APHOMIA GULARIS, ZELL.—In conjunction with Mr. Wakely's note on this species in the current volume of the *Entomologist* (66: 99), it will be of interest to note that I took a fresh specimen of this insect sitting on a window in Fen Court, London, E.C. 3, on the evening of June 9th this year. In the circumstances it is rather



difficult to find out whether any samples or consignments of food-stuffs have been received from the Mediterranean or East, but if I can get any such information I will pass it on.—STANLEY N. A. JACOBS ; 54, Hayes Lane, Bromley, Kent.

SOME NOTODONTIDS IN KERRY.—In confirmation of my find of the larvae of *Leucodonta bicoloria* last July in a wood near Kenmare, I am pleased to announce the emergence of a female at 4.45 p.m. to-day from one of the three pupae, the favourable result of the rearing of the same number of larvae taken (*vide Entom.*, 65 : 238). The *Odontosia* pupa is still quiescent. The *Stauropus fagi* larvae produced two fine females on January 23rd and February 4th last.—C. DONOVAN (Lt.-Col., I.M.S., ret.) ; Bourton-on-the-Water, Glos., June 8th, 1933.

BUTTERFLIES IN CORNWALL.—From May 16th to 26th I stayed at Penzance, and when possible took excursions to the Lizard and the Land's End. All the spring butterflies which usually occur there were in evidence. *Pyrameis cardui* was first seen at Kennack Sands, Lizard, on May 18th ; though never in large numbers, it occurred freely from then onwards, and it is quite likely that many were in Cornwall before I saw one. *Pyrameis atalanta* was also in small numbers during my stay, with a few of our hibernating *Vanessa io* and *Vanessa urticae*. *Pieris rapae* and *P. napi*, with *Euchloë cardamines*, were plentiful, but the abundance of *Pieris brassicae* was remarkable ; they were in quite fresh condition, with a large proportion of females. *Chrysophanus phlaeas*, *Lycaena icarus* and *Cyaniris argiolus* were few and far between, and but few *Coenonympha pamphilus* put in an appearance ; but *Pararge aegeria* and *P. megera* were common, the former of the form *egerides*, Staudinger. I have collected in Cornwall for a good many years, but have found no trace of the true *egeria*, so I am somewhat sceptical of the authenticity of the Mediterranean forms which I have seen labelled as from Cornwall. To me the most remarkable butterfly was *Argynnis selene*, which was flying in some numbers on May 23rd in a sheltered cove near the Land's End. This early emergence may account for the second brood, which I have taken on more than one occasion in the same place.—B. W. ADKIN ; Highfield, Pembury, Kent.

FIRST APPEARANCES AND EARLY SPRING COLLECTING, 1933.—The first two months of the year were exceedingly bleak and unpropitious. The majority of the early Lepidoptera did not make their appearance till nearly the end of February, though I saw *Phigalia pedaria* first on the 6th, *Hybernia leucophaeria* on the 8th, and *H. marginaria* on the 16th of that month. From the last few days of February onwards there began a remarkable and almost record spell of fine weather which brought all insects forward in a great rush. The following are the dates on which I first noted the spring species in this district : February 27th, *Anisopteryx aescularia* ; March 4th, *Polyplocia flavicornis* and *Apocheima hispidaria* ; March 8th, *Taeniocampa gothica* and

*T. incerta*; March 11th, *Brephos parthenias*; March 13th, *T. munda*; March 14th, *Malenydris multistrigaria* and *Tephrosia bistortata*; March 18th, *Taeniocampa stabilis*, *T. pulverulenta* and *Pachys strataria*. *Apocheima hispidaria* was not so abundant as usual in the district, but on March 17th I obtained an entirely black male of this species. On the 13th and 29th I beat two *Orrhodia rubiginea*, the second one being a female, from which I am hoping to breed. I travelled to a wood in mid-Essex on March 27th, and obtained a fine series of *Brephos notha*, which was flying in great numbers around an isolated clump of tall aspens. I paid two visits to the New Forest. The first, from March 25th to 26th, yielded, from sallow, *Panolis piniperda*, *Graptolitha ornithopus*, *Xylocampa areola*, *Lithophane socia*, *Cidaria miata* and plenty of commoner species. By day, in brilliant sunshine, any number of *Gonepteryx rhamni* were flying. I also took one *Pieris rapae* and three *Polygonia c-album*. In the Forest again on April 1st sallow provided *Lithophane socia*, *L. semibrunnea* (♀) and *Pachynobia rubricosa*. In Dorset, on 2nd April, I found larvae of *Melitaea aurinia* in good numbers, some nearly full-fed. On April 6th, in the neighbourhood of Chiddingfold, *Aleucis pictaria* was flying sparingly between 9 and 10 p.m. along a roadside in company with a host of *Anticlea badiata*. I also took an *Ephyra pendularia*—a very early date for this species.—C. G. M. DE WORMS; Egham, April, 1933.

MIGRATION OF PYRAMEIS ATALANTA.—Will someone kindly explain why butterflies, and *P. atalanta* in particular, should migrate? Mankind migrates to find new homes and make money. Birds migrate to breed, or feed. Locusts move about (not migrate) definitely in order to find food to eat. That butterflies get blown about I have shown, and they also are transported at times by boat. When I was going from Hong-Kong to Japan a *P. cardui* took passage in the forward well deck of the steamer I was on. I saw her flying about every day for three days, when she disappeared. I am frankly sceptical about the migration of this species, and I might add that although I have spent many years of my life at Dover, Portsmouth, Plymouth and Torquay, and kept a constant watch to see Red Admirals arrive from overseas, I never saw one flying over the sea, in spite of the fact that I have been very many hours in boats and crossed the Channel very frequently. Birds of all kinds, of course, I have often seen moving across the Channel.—J. B. G. TULLOCH (Brig.-General); Hill Court, Abergavenny, September 11th, 1932.

LOCAL SCARCITY OF POLYGONIA C-ALBUM IN 1932.—In 1930 this species, after gradually becoming more common in this district, ended by being one of the commonest of butterflies. It occurred everywhere in gardens, lanes, fields and woods. Then we had a cold damp spring in 1931. Hardly any *c-album* were visible during the year. In 1932 we had a still colder and damper spring. Up to the middle of September I did not see a single specimen of the insect at all. Most other common butterflies similarly were fewer in 1931 than in 1930, and in 1932 some common species, such as

*Lycaena icarus* and *Pararge egeria*, were entirely absent from my property, although common enough in 1930. To my mind this tends to show that the occurrence of a species depends upon the weather during the early stages of its existence. Cold and damp will kill off most living things, including human beings. It is probable that the erratic climate of England has more to do with the appearance or disappearance of insects than parasites or immigration.—J. B. G. TULLOCH (Brig.-General); Hill Court, Abergavenny, September 11th, 1932.

**DWARF PIERID BUTTERFLIES.**—The note on this subject by Mr. Welch in the April number (**66**: 81) leads me to think that it may be of interest to record two that I possess. Both are *Pieris nupi*. One I took at Hemsby, Norfolk, on May 17th, 1914. It is a female of the spring brood (badly rubbed), and measures 34·5 mm. The other, also from Norfolk (Horsford Heath, near Norwich), is a male, taken on May 24th, 1915. It possesses markings of the spring type in that the apical blotch is divided by white lines, but also of the summer type in that the spots on both the upper and lower wings are very distinct. It measures 33·5 mm.—J. E. CAMPBELL-TAYLOR, F.R.E.S.; Barclays Bank House, Pembroke Dock.

**GREASY INSECTS.**—The method of curing grease in Lepidoptera suggested by Mr. Crowther (*Entom*, **66**: 8) a short time ago by suspending the insect upside down in petrol, on a piece of cork, I find is highly successful. I have tried many methods, but this is quite the best I have found. I recently treated a drawer-full of hawk moths which were in very bad condition, and every one of them is now in splendid form, and there is no alteration in colour whatsoever. I use Shell No. 1, but I suppose any good grade petrol will do. Aviation is not essential.—DEREK SHANNON, F.R.E.S., F.R.S.A.; Gothic Cottage, Four Oaks Road, Four Oaks, Birmingham, April 29th, 1933.

**A GYNANDROUS AGLIA TAU.**—Early last year I purchased six pupae of the continental species *Aglia tau* (The Tau Emperor Moth). I was fortunate to obtain a pairing from a fine pair and a good batch of eggs resulted. The young larvae, with the exception of one, all fed up well and pupated in perfect condition. On April 15th one of the pupae produced a perfect halved gynandromorph, the right side, antennae, wings and tuft of hairs at tip of abdomen being male, whilst the whole of the left side is female. As such an occurrence would seem to be rather rare, it would be interesting to learn whether any other readers have had a similar experience. I must confess that I killed the specimen to keep it perfect for my collection. Now I grieve that I did so without waiting to see whether it would have had any attraction for either sex. Has sexual attraction in such a case ever been observed?—ARTHUR WELTI; "Roswyn," 141, Perry Vale, Forest Hill, S.E. 23.

[Dr. E. A. Cockayne writes: "I believe halved gynandromorphs of *Aglia tau* have been recorded, and I think some are mentioned in

Schultz's list. As to sexual attraction, I see no reason why a gynandromorph should not be able to produce the female scent, but whether one would 'call' or not I don't know. I don't remember any record of a gynandromorphous moth showing sexual desire, either as male or female, but I believe there is a record of a male *Argynnis paphia* paired with a halved gynandromorph. I can't remember the reference. I don't think it is likely that a halved gynandromorph could produce fertile eggs or even pair with a normal female. The organs are usually incomplete and always distorted in Lepidoptera."]

THE ROBIN (*CRITHACUS RUBECULA MELOPHILUS* HARTERT) DESTROYING *LEUCOPTERA LABURNELLA* STT. AND *GRACILLARIA SYRINGELLA* FAB.—This afternoon I was cutting a privet hedge back. This hedge is full of *G. syringella* and also shelters a large number of *Leucoptera laburnella*, which breed in a laburnum tree close at hand. The clipping caused the insects to leave the hedge, and a robin and his mate, who are feeding young in the garden, joined me after I had been at work about five minutes, and caught the insects as they left the hedge, and also after they had come to rest on a fence, some trees, and the rocks of a rock garden, with great pertinacity. After catching a dozen to twenty in their beaks they fed the young with them and returned for more. I was surprised that such small fry should be worth the trouble of catching for food. Of course they did not confine themselves to these two insects, as they got a small brown noctua, probably *Monima pulverulenta* Esp., and a geometer, which was too far off to identify, but was almost certainly *Xanthorhoe fluctuata* L., besides larvae of Tortrices, which wriggled out of the cut tips of the shoots, the two species that frequent this hedge being *Cacoecia podana* Scop. and *Pandemis ribeana* Ht.—W. PARKINSON CURTIS; 14, Alington Road, Bournemouth, May 6th, 1933.

MOTHS ATTACKED BY BIRDS.—On several occasions I have observed the Great Tit (*Parus major*) catch a cinnabar moth (*Hipocrita jacobaeae*) in flight "with an audible snap". A similar sound is made by the Hedge Sparrow, which I have seen catching *Epinephele jurtina* on the wing. At different times I witnessed a Cream-spot Tiger and a Red Underwing chased by a Great Tit, but was unable to see the conclusion, and once, at Bodiam Castle, I saw a dragonfly pursued at length, but unsuccessfully, by a Pied Wagtail.—F. D. WELCH, M.R.C.S., F.Z.S.; Hartley, Longfield, Kent.

EPHEMERELLA NOTATA ETN. AND HEPTAGENIA FLAVIPENNIS DUF. (EPHEMEROPTERA) IN WEST SURREY.—On May 28th, whilst collecting Ephemeroptera near the River Wey between Tilford and Elstead, I was fortunate in obtaining a series of both sexes of *E. notata* Etn. The insects were present in some numbers, particularly at Elstead Bridge, where the females could be seen flying over the river, each carrying her rounded egg-mass at the apex of her abdomen. No subimagines were seen. I believe this to be the first record of

the capture of this species in the south of England, previous records including southern Scotland, Cumberland, Yorkshire and Radnorshire. A single male subimago of *Heptagenia flavipennis* Duf. was beaten from a young birch tree at the top of a small cliff overlooking a bend in the river in the same district. Further examples were sought for, but without success. Eaton in his monograph gives as locality "England, near Reading, on the Kennet and Holybrook", and remarks that "the subimago emerges chiefly after sunset". My example was taken at about 6.30 p.m.—D. E. KIMMINS; 16, Montrave Road, Penge, S.E. 20.

TRICHOPTERA.—When fishing the Wharfe at Hebden, Yorkshire, I noticed a small caddis pupa swimming in to the bank along the surface of the water. This was duly captured and proved to be a *Glossosoma vernale*, Pict. It is of interest to record the methods of emergence of the caddis-flies as they vary in different species. For instance, *Sericostoma personatum*, Spence, and *Brachycentrus subnubilus*, Curt., both emerge from the pupal envelope on the surface of the water. Other species, amongst which *Glossosoma* must now be numbered, swim to the land and crawl up a rock or weed-stem, where the emergence takes place.—MARTIN E. MOSELY; British Museum (Natural History), May 26th, 1933.

GRYLLUS CAMPESTRIS L. IN SURREY.—A number of specimens of the Field Cricket (*G. campestris* L.) were heard singing on a piece of sandy heath-land near Tilford during the afternoon of May 28th. Time did not permit of an attempt to obtain specimens, but I have no doubt as to their identity. Mr. B. P. Uvarov, to whom I mentioned the fact, informed me that the species is very local, and suggested that the occurrence of this colony should be recorded.—D. E. KIMMINS; 16, Montrave Road, Penge, S.E. 20.

IMMIGRANT LEPIDOPTERA.—S.E. Union of Scientific Societies' Immigration Scheme:

*Pryameis cardui*, L.—Records have now been received from most of the southern counties, indicating the arrival of this insect in moderate numbers all along the south coast. The only note of actual immigration observed comes from Start Point Lighthouse, S. Devon, where Mr. A. W. Godfrey, on May 19th, saw nine specimens "coming in from the sea, then alighting on the ground, then taking rapid flight to westward".

*P. atalanta*, L.—The records cover the same ground as for *P. cardui*, and indicate rather larger numbers. Again Mr. A. W. Godfrey notes that on May 19th he observed seventeen specimens behaving in the same way as *P. cardui* above.

*Colias croceus* Fourc.—Winchester, Hants, 5.vi.33, one specimen (J. D. M. Stuart); Freshwater, I.W., 7.vi.33 (E. A. C. Stowell). Mr. Stowell adds that this species was reported by schoolboys in early May.

*Macroglossa stellatarum* L.—Littlehampton, Sussex, 6.vi.33, two specimens (Major H. C. Jeddere-Fisher).

*Plusia gamma* L.—Langton Matravers, Dorset, 19.v.33, one (I. A. Dannreuther); Southampton, 20.v.33, two and a fair number of odd specimens observed in and near Southampton since this date (W. Fassnidge); Littlehampton, Sussex, 23.v.33, odd specimens, since common (Major H. C. Jeddere-Fisher); Alverstone, I.W., early June, "a perfect pest" (E. A. C. Stowell).

*Nomophila noctuella* Schiff.—Start Point Lighthouse, S. Devon, 16.v.33, several (A. W. Godfrey); Hastings, 20.v.33, five (Capt T. Dannreuther).

*Plutella maculipennis* Curt.—Winchester, 16.v.33, one ♂ (W. Fassnidge); since seen in the neighbourhood of Southampton very sparingly.—W. FASSNIDGE, Recorder; 47, Tennyson Road, Southampton.

IMMIGRANT LEPIDOPTERA.—A few observations that appear not to have been published elsewhere have reached me. *Pyrameis cardui* was seen at Witherslack on June 7th and at Grange-over-Sand the following day (A. E. Wright); also at Chesham on June 5th (J. W. Woolhouse); and at Balcombe, Sussex (2), on May 28th (H. M. Edelsten). *Pyrameis atalanta* was seen at Bould Wood, Oxon, on May 20th (P. Siviter Smith); at Chipping Campden, Glos, on June 3rd (Hugh Scott); and at Grange-over-Sands on June 9th (A. E. Wright). *Plusia gamma* occurred at Bould Wood on May 20th, and at Moreton-in-the-Marsh the following day (P. Siviter Smith); and at Grange-over-Sand on June 10th (A. E. Wright). At the latter locality *Nomophila noctuella* was also met with by Mr. Wright on May 27th. Mr. W. Parkinson Curtis records *Macroglossa stellatarum* at Bournemouth on May 22nd.—N. D. RILEY.

IMMIGRANT INSECTS AT SEA.—Mr. J. W. R. Reeve, serving in the Outer Dowsing Light-Vessel, situated thirty miles east of Spurn Point, at the entrance to the River Humber, sent for identification a female specimen in very good condition of *Hipocrita jacobaeae*, being one of three seen at the light-vessel at 7.30 p.m. on May 23rd, 1933, flying east slowly in a light E.N.E. wind in hazy sunny weather, temperature 52° F., the other two being seen at 11.30 a.m. and 2.30 p.m., flying 30-35 ft. above the sea. He states that on May 16th, 1.30 p.m., and May 21st, noon, two more Cinnabar moths were seen flying eastwards. These he just failed to catch owing to their speed and alertness. At night several small insects were seen flying through the rays of the light, but he failed to catch any. *Hipocrita jacobaeae*, Linn., was placed on the list of resident species which may be reinforced by immigration upon a suggestion made by J. W. H. Harrison in 1905 (*Ent. Record*, 17 : 300). It is believed that this is the first record of a specimen taken at sea out of sight of land, and it has been sent to Dr. C. B. Williams, F.R.E.S., Harpenden for examination.—T. DANNREUTHER (Capt. R.N.), Hon. Sec. Insect Immigration Committee, S.E.U.S.S.; "Windycroft," Hastings.

## SOCIETIES.

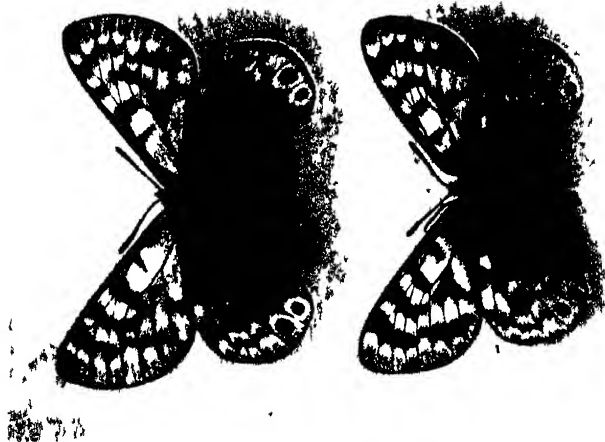
ENTOMOLOGICAL SOCIETY OF LONDON.—*Wednesday, April 5th, 1933.*—Mr. R. W. Lloyd, Vice-President, in the Chair.—*Election of Fellows.*—The following were elected Fellows of the Society: W. E. Cox, 98, Marlborough Road, Cardiff; R. G. Fennah, B.A., Emmanuel College, Cambridge; Major E. A. Glennie, Geodetic Branch, Survey of India, Dehra Dun, U.P., India; O. C. Lloyd, Great Dixter, Northiam, Sussex; Dr. Paul Martin, Casilla No. 112, Lima, Peru; R. G. C. C. Sandeman, Dan y Parc, Crickhowell, Breconshire; J. T. Wattison, Rua da Circumvalacao, Senhora da Hora, Portugal.—*Obituary.*—The death of Mr. J. J. F. X. King, a Fellow of the Society, was announced.—*Exhibits.*—Mr. H. St. J. K. Donisthorpe exhibited and made remarks on a rare Scolytid from Windsor Forest. Dr. F. A. Dixey, F.R.S., exhibited specimens of *Catopsilia* from Asia, and made remarks on their dimorphism. Dr. C. B. Williams exhibited photographs of the locust glacier on Mount Cook, Montana. Mr. K. Mellanby (a visitor) made remarks on The Temperature of the Insects' Environment, illustrated with lantern-slides.—*Papers.*—The following papers were read: (1) On the Tarsal Sense Organs of Lepidoptera, by Dr. H. Eltringham, F.R.S.; (2) On the Internal Anatomy of Some Thysanoptera, by U. S. Sharga, M.Sc.—S. A. NEAVE, *Hon. Sec.*

THE SOUTH LONDON ENTOMOLOGICAL SOCIETY.—*April 13th, 1933.*—Mr. T. R. Eagles, Vice-President, in the Chair.—Lt. C. G. Lipscomb, of Blackdown, Mr. A. G. Peyton, of Ramsgate, and Mr. G. Walter, of Holmwood, were elected members. Dr. Bull exhibited *Taenio-campa munda* with almost complete submarginal row of dots; Mr. S. Wakely, larvae of the cross *Oporinia filigrammaria* with *O. autumnata*, and larvae taken at the Ockham meeting on April 5th; Mr. MacNulty, a bred series of *Selenia bilunaria* from Alfriston. Mr. Howarth read notes on the breeding of *Lachneis lanestris* from Canvey, and Mr. Eagles exhibited young larvae of *Pachygastria trifolii* feeding preferably on *Lathyrus pratensis*, the "ant beetle" *Clerus formicarius* predaceous on pine-boring beetles, and various other larvae. The report of the Effingham Field Meeting on April 8th was read.

*April 27th.*—Mr. C. G. M. de Worms, President, in the Chair.—Mr. de Worms gave a short account of his recent holiday in Scotland and the North of England, and exhibited numerous local species in oval and larval stages. Dr. E. A. Cockayne exhibited a wholly black larva of *Abraxas grossulariata* from Newcastle-on-Tyne; Mr. S. Wakely, larvae from Boxhill and a female glow-worm; Mr. Jacobs, cocoons of a species of *Nepticula* from *Salix*; Mr. Eagles, Coleoptera taken at the Effingham Field Meeting. Mr. O'Farrel read notes on the increase of melanism in the Wimbledon area. Mr. R. Adkin showed one of the pale Manchester *Biston betularia*, and Dr. Bull, various larvae; both he and Mr. Bliss reported on the dates of appearance of numerous spring species of Lepidoptera.—HY. J. TURNER (*Hon. Editor of Proceedings*).



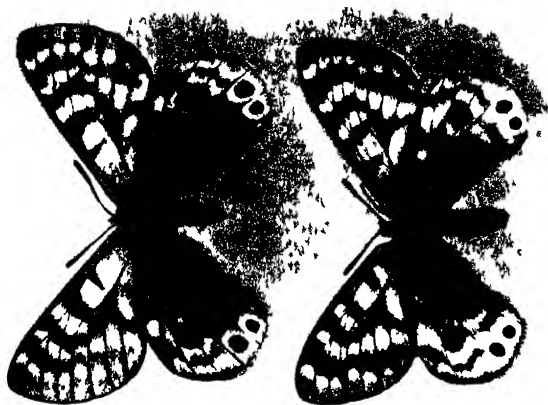




H. G. Herring photo

*PARNASSIUS ACCESTIS FELIX* ssp nov

Underside



H. G. Herring photo

Upperside

# THE ENTOMOLOGIST.

VOL. LXVI.]

AUGUST, 1933.

[No. 843

## TWO NEW SUBSPECIES OF *PARNASSIUS ACDESTIS* (LEP. PAPILIONIDAE).

BY CURT EISNER.

(Plate IV.)

### *Parnassius acdestis peschkei* ssp. nov.

VON HERRN R. PESCHKE, Teschen, dem ich schon verschiedene interessante Parnassier verdanke, empfing ich 2 ♂ 1 ♀ einer neuen Rasse von *P. acdestis* Gr. Gr., die ich **peschkei**, subsp. nova, benenne. Sie steht der subsp. **rupshuana** Av. (Typus Tagalang-la, Rupshu) am nächsten, obwohl sie von ihr durch das Fluggebiet der subsp. **ladakensis** Av. (Typus Chéra-la, Ost-Ladak) getrennt ist. *Peschkei* unterscheidet sich von dem mir vorliegenden ♂♀ Cotypen **rupshuana** Av. durch prägnantere, dunklere Zeichnungen. Die Marginale des Vfl. ist schmaler, die Submarginale breiter, die lunulae grösser. Die Submarginale des Hfl. deutlicher erhalten. Die Ozellen noch etwas kleiner. Die Hinterrandsschwärze nicht so ausgebreitet. Grosse ♂ 28–29 mm., ♀ 27 mm. (meine *rupshuana* ♂ u. ♀ 26 mm.). Die Tiere wurden auf dem Wege von Leh nach dem Karakorum in der Gegend von Sa Songa (fast genau nördlich von Leh, 34–35" Breite, 75–76" Länge) gefangen.

1♂ 1♀ Typen in coll. Eisner; je 1 ♂ Cotypen in coll. Peschke & coll. Eisner.

### *Parnassius acdestis felix* ssp. nov.

2 ♂ 2 ♀ eines *acdestis*, die ich im Tausch vom Britischen Museum in Tüten, als "*lathonius*" bezeichnet, empfing, stehen viel näher der subsp. **macdonaldi** Rothsch., von der mir typische 3 ♂ 3 ♀ vorliegen. Die beiden Paare unterscheiden sich aber von subsp. **macdonaldi** Rothsch. durch ihre geringere Grösse, ♂ 26–28 mm., ♀ 25–26 mm. (*macdonaldi* ♂ 28–30, ♀ 28–31 mm.), schmalere Marginale des Vfl., wodurch die lunulae deutlicher hervortreten, Verschmälerung der Zellflecken, besonders des Mittelzellfleck, der sich nach unten verjüngt und die untere Discoidale, auch beim ♂, knapp erreicht. Die Wurzelschwärze bei ♂ und ♀ zurücktretend und das Hinterrandsschwarz beim ♀ noch mehr zurückgedrängt als bei subsp. **macdonaldi** Rothsch. Ich benenne die neue Rasse **felix**, subsp. nova, meinem Freunde und Mitarbeiter Felix Bryk zu Ehren.

*Patria* : Samandha, S.O. Thibet (etwa 2 Tagereisen s. ö. Gyantse).

Typen : 1 ♂ 1 ♀ in coll. British Museum, London.

Cotypen : British Museum, London, und coll. Eisner, Berlin.

*PARARGE AEGERIA* IN CORNWALL.—Mr. B. W. Adkin is "sceptical (p. 162) of the authenticity of the Mediterranean forms" which he has seen labelled as from Cornwall, but I can assure him that I have seen specimens hereabouts very heavily spotted with yellow, especially the females, and with the spots *very deep* in colour, in fact almost red-brown in some cases; these I take to be the form referred to by Mr. Frohawk in his *Natural History of British Butterflies*, 2 : 5, but as I am not familiar with the true *aegeria* I cannot speak more definitely. The species is very common hereabouts and occurs in my garden with *P. megera*, *Epinephele janira*, *E. tithonus*, *Satyrus semele* and *Aphantopus hyperantus*.—C. NICHOLSON; Tresillian, Cornwall, July 10th, 1933.

*EUPLEXIA LUCIPARA* AND *MIANA STRIGILIS* AT LIGHT.—My own experience does not agree with that of Mr. Robert Adkin (pp. 123–4), namely, that light has little attraction for *Euplexia lucipara* and *Miana strigilis*. I do not use a trap, but I do much of my night collecting with a powerful light (100 watt) illuminating a background of cream-painted woodwork. *E. lucipara* is readily attracted by the light. It occasionally rests for a brief moment on the woodwork, but is much more apt to fly wildly round the light, and perhaps this propensity accounts for its absence from Mr. Adkin's trap. *M. strigilis* frequently comes to rest near the light, and it is difficult to account for its not entering the trap. The species, usually plentiful, was rather scarce here in 1932. *M. fasciuncula*, which is not included in Mr. Adkin's list, was very plentiful at my light last year, and I also took one *M. literosa*.—E. P. WHITCOMBE; Bewdley, Worcestershire.

*GOMPHUS VULGATISSIMUS* L. (ODONATA) IN SUSSEX.—As records of this fine dragonfly outside its usual haunts in the New Forest are scarce, I feel that the capture of two males and a female on the banks of the River Arun, between Billingshurst and Pulborough, on June 4th is worthy of note. The specimens shot up in the air from a bush as I passed and a lucky stroke of the net secured all three at once. I saw no others that I could definitely identify as *G. vulgatissimus*, but, as the district was swarming with dragonflies of various species, it would have been easy to overlook them. The specimens have been presented to the British Museum (Natural History). Previous records for Sussex are "One on the Downs in 1846, and another in Love Lane, Lewes, in 1851 (*Unwin*)", mentioned by the Rev. E. N. Bloomfield, *Ent. Mo. Mag.*, 1900, 36 : 151, and Fittleworth, 19. v. 12 (*H. T. Watts*), recorded by F. W. and H. Campion, *Entom.*, 1913, 46 : 78.—D. E. KIMMINS; 16, Montrave Road, Penge, S.E. 20, July 22nd, 1933.

## A COLLECTING TRIP IN SCOTLAND, THE NORTH OF ENGLAND AND WALES, APRIL, 1933.

BY C. G. M. DE WORMS, F.R.E.S.

I HAD always heard such glowing accounts of collecting in Scotland that I thought that the Easter period of 1933 should yield a good harvest of the early species of the season. I am glad to say that I was not to be disappointed in my exploits in those northerly regions.

I left Euston by the night express on Friday, April 7th, and travelled direct to Aviemore, which I reached early on the 8th in a blaze of sunshine. In fact I found the weather 500 miles north of London as hot as in the south. I soon got to work in the birch wood on the slopes overlooking the town, and shortly afterwards took a fine male *Endromis versicolor* on the wing. The time of flight seemed to be precisely midday till 3 p.m. G.M.T. There were a large number of the banded form of *Lobophora carpinata* on posts and tree-trunks, and a few worn *Brephos parthenias* still flying. On that and all subsequent days I searched the old birch stems in vain for *Brachionychna nubeculosa*. A worn male and female were found on Sunday, the 9th, by Mr. Hedges. These two were the last of the season. I later heard that this species was at its best from March 25th to April 3rd. My stay at Aviemore lasted till Good Friday, April 14th. On each night collecting was quite productive, chiefly at the willow bloom which was just at its best on my arrival. On the first evening one small tree yielded ten *Calocampa vetusta*. *C. exoleta* was not nearly so plentiful, and just turned up oddly here and there. Sap borings on the birch stems provided a fair harvest of common insects on most nights, but sugaring was, on the whole, very poor. The family of *Taeniocampas* was very well represented on all occasions. *Taeniocampa gothica* was very abundant, both in its darkest forms and together with a fair sprinkling of f. *gothicina*. Some very fine *T. incerta* were obtained during the visit ranging from slate grey to fawn and straw-coloured. I was able to get a good pairing of this species. Another very frequent visitor to the willow was *Pachnobia rubricosa*, which provided chiefly the fine northern f. *lucida*. I also beat one or two *Panolis piniperda*, which is very different from the southern type. On the 11th we searched the small birch saplings after dark for larvae and found a large number of *Aplecta tinctoria* feeding on the buds. On the following day I found a full-fed larva of *Phragmatobia fuliginosa* and a three-quarter grown *Dasychira fascelina*. On the 13th I was joined by Mr. A. M. Morley, of Folkestone. During that day we found 9 ♂ and 3 ♀ *Endromis versicolor*

at rest on small birch trees and a good many more after dark in the same situations. We obtained about twenty of this species in this manner in two days, and I had the good fortune to find a crippled female in the act of depositing a large batch of ova.

We left Aviemore on the afternoon of the 14th and proceeded to Struan, where we spent the Easter holiday in company with Mr. A. W. Hughes. On the Saturday and Sunday, April 15th and 16th, we spent the whole day walking along the stretch of railway line, on the posts of which are to be found *Nyssia lapponaria*. Unfortunately the bag was somewhat disappointing, as we only obtained about a dozen of each sex altogether in the two days. A very good series was secured by Mr. F. W. Andrews and his family on the 9th. However, our somewhat meagre catch by day was compensated for by extremely good collecting at night. On each of the three evenings we were at Struan we found *Cidaria suffumata* flying in great numbers at dusk along the road leading to the station. We obtained a very good series of this species, including a good many of the brown and black forms. On the heather there were any number of *Malenydris multistrigaria* in better condition than those at Aviemore. Larvae of *Aplecta tincta* were again as common on the birch and bog myrtle, and there were a few *Polyploca flavicornis* still fairly fresh. On Easter Sunday, the 16th, we had a remarkable night at sallow near the station. One large tree provided quite fifty *Pachnobia rubricosa*, together with five of the pink form of *Taeniocampa gracilis*, three *T. populeti*, a good many *Calocampa vetusta* and a few *C. exoleta*. The sheets were alive with moths, and very many more than I have ever seen on a good sallowing night in the south. During our stay at Struan we put up at Mrs. Cameron's, who owns a very nice and spacious house overlooking the falls. We were provided with every comfort and facility, together with excellent meals. Mr. Morley and I left Scotland on Easter Monday, the 17th, and, travelling by train *viâ* Perth, Carlisle and Carnforth, we reached Witherslack that evening about dinner-time. Unfortunately our visit coincided with a very cold snap and yielded the poorest collecting. The first night was almost a complete blank except for a solitary *Malenydris salicata*, though Mr. Demuth obtained a few *Pachnobia leucographa*. On the following evening, the 18th, we found several *Lobophora polycommata* at rest on the ash saplings, but conditions were far too chilly for day work. We found the "Derby Arms" a very good haven in this type of weather.

On the 19th I proceeded direct to Formby, where I stayed a further two days, but here again it was extremely cold and unpropitious. I did not see an insect or larva the whole time on the sandhills. On Friday, the 21st, I travelled to the last destination

of my trip, Conway, North Wales, which I reached in a very spring-like spell. The same afternoon I walked to the sandhills, and in a very short time I was pleased to find several quite fresh *Nyssia zonaria* of both sexes at rest on the grass-stems. I then started searching under the Marrams and very quickly unearthed some twenty larvae of *Leucania littoralis*, mostly nearly full-fed. On the next day and evening (the 22nd) I visited the Sychnant Pass, but in spite of careful search on the rocks I did not find any larvae of *Agrotis ashworthii*. After dark there were a few *Malenydris salicata* and *Anticlea nigrofasciaria* on the wing, and also several miscellaneous Noctuid and Geometrid larvae on the heather. I returned home on the 23rd, after what was on the whole a very successful tour both as regards weather and collecting. Scotland provided easily the best sport, and the number of Lepidoptera far exceeds the normal quantities of the south. In conclusion I can heartily recommend this part of the British Isles in the spring and especially in such a very good and early season as that of 1933 proved to be.

Milton Park,  
Egham,  
May, 1933

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APATURA IRIS IN CORNWALL?—With C. N. Hughes's opening remarks on p. 139 I am, of course, in perfect agreement, but I do not absolutely reject the possibility that *iris* larvae might be got to feed on heather or other plant unrecorded as one of its regular food-plants. I see no reason whatever to doubt that the imago was seen on great knapweed flowers, as described on p. 111, because I know of no other of our butterflies that could be described as "very deep blue with white markings" and thought by the observers to be larger than *P. atalanta*, *A. urticae*, etc. It could scarcely have been *Euvanesa antiopa*, and there is no justification for thinking it an exotic species.—C. NICHOLSON.

ACRONYCTA ALNI IN CO. LIMERICK.—It may be of interest to record that a larva of this species was found on August 15th last by a gardener at Plassy, co. Limerick, feeding on apple, and sent to me. A fine male has just emerged.—A. J. L. BOWES; Christ Church, Oxford, June 15th, 1933.

[Lt.-Col. C. Donovan has kindly supplied the following interesting comment.—ED.]

"The records for Ireland are: Powerscourt, Wicklow, one (Birchall); a dubious find on the walls of Trinity College, Dublin, and a larva, Passage West, co. Cork (Donovan), *Entom.*, 1906, p. 236. The unrecorded specimens obtained for me are six pupae taken in co. Cork, resulting in three imagines. As far as South Cork is concerned I suspect this moth is frequent, if rotten alder stumps are examined in winter for the enclosed pupae, unmistakable by the discarded larval skin and the characteristic cremasteric end of the pupa."—C. DONOVAN; June 21st, 1933.

## INSECTS AND OTHER ARTHROPODS COLLECTED BY MAJOR R. A. BAGNOLD'S EXPEDITION TO THE LIBYAN DESERT.

By W. B. K. SHAW.

THE specimens given in the list below were collected during the expedition to the Libyan Desert in the autumn of 1932 under the leadership of Major R. A. Bagnold, Royal Corps of Signals. The party of eight members, using light Ford cars as their means of transport, left Cairo at the end of September and returned thither some two months later after covering over 6000 miles of largely unknown country. The object of the expedition was to explore the little-known and unknown parts of the Libyan Desert. The route taken was roughly as follows: Cairo, Kharga, J. 'Uweinat, Sarra Well, Tekro, along the eastern border of French Equatorial Africa, El Fasher, Bir Natrun, Merga, Laqiya, Selima, Wadi Halfa, Dakhla, Baharia, Cairo. The greater part of the country traversed is absolutely barren desert of rock, gravel or sand over which stretch at intervals formidable lines of sand-dunes. With the exception of the mountain mass of 'Uweinat prominent natural features are few. South of lat. 17, which is the approximate northern limit of the annual rainfall, a sparse vegetation begins, increasing gradually in density as one proceeds southwards. The Wadi Howa, to which frequent reference is made below, begins its course on the borders of French Equatorial Africa in about lat. 15.30 long. 23.00, and winds for more than 300 miles across the southern part of the desert to lose itself in the sands south of Bir Natrun. Though within the memory of man no water has flown along the Wadi its broad shallow bed is clearly marked by a wide belt of trees and grasses. Although no member of the party possessed any special knowledge of entomology, steps were taken to bring back from this remote area as full a collection as circumstances permitted. Most of the specimens were collected by Lieut. G. L. Prendergast, Royal Tank Corps.

### INSECTA.

#### COLEOPTERA.

(Determined by Mr. G. E. Bryant and Sir Guy A. K. Marshall.)

#### CARABIDAE.

*Anthia marginata*, Dej.—Wadi Howa, rolling sand country, some vegetation, 30.x.32.

#### COCCINELLIDAE.

*Coccinella 11-punctata*, L.—Near Bir Natrun, sandstone and sand, 13.xi.32.

## COPRIDAE.

*Scarabaeus cristatus*, F.—Wadi Howa, 29.x.32.

## DYNASTIDAE.

*Temnorhynchus* sp.—Murdi Depression, sand sheet, 26.x.32.

## TENEBRIONIDAE.

*Ocnera hispida*, Forsk.—Tekro Oasis, sand and bushes, 19.x.32.

*Zophosis carinata*, Sol.—Wadi Howa, 29.x.32.

*Anemia fenyezi*, Rtt.—Wadi Howa, 29.x.32; Murdi Depression, sand sheet, 26.x.32.

## CURCULIONIDAE (determined by Sir Guy A. K. Marshall).

*Myloccerus posthi*, Hust.—Wadi Howa, 31.x.32.

*Pycnodactylus tomentosus*, Fhs.—Wadi Howa, 29.x.32.

*Cosmogaster cordofanus*, Fhs.—Wadi Howa, 29.x.32.

## HYMENOPTERA.

(Determined by Mr. B. P. Uvarov.)

## EUMENIDAE.

*Eumenes dimidiatipennis*, Sauss.—J. 'Uweinat, near rock well, 8.x.32.

## MUTILLIDAE.

*Apterogyna savignyi*, Klug.—Wadi Howa, 30.x.32.

## FORMICIDAE.

*Camponotus compressus thoracicus*, F.—Tekro Oasis, sand and bushes, 19.x.32.

## LEPIDOPTERA.

(Determined by Mr. G. E. Bryant.)

## NYMPHALIDAE.

*Neopyrameis cardui*, L.—West of Sarra Well, sandstone ridges, 16.x.32.

## HYPSIDAE.

*Utetheisa pulchella*, L.—Rolling sand desert, east of Murdi Depression, 27.x.32.

## NOCTUIDAE.

*Agrotis ypsilon*, Hb.—Wadi Guroguro, 28.x.32; Wadi Howa, 29.x.32.

## DIPTERA.

(Determined by Sir Guy A. K. Marshall.)



## CALLIPHORIDAE.

*Wohlfahrtia nuba*, Wied.—J. 'Uweinat, dry wadi, 8.x.32; Tekro Oasis, sand and bushes, 19.x.32; north-west of Tekro Oasis, sand-sheet, 18.x.32.

## TRYPETIDAE.

*Acanthiophilus helianthi*, Rossi.—Desert north-east of J. 'Uweinat, 4.x.32.

## RHYNCHOTA.

(Determined by Mr. B. P. Uvarov.)

## CYDNIDAE.

*Cydnus* sp.; not in the British Museum.—Murdi Depression, sand sheet, 26.x.32.

## REDUVIIDAE.

*Reduvius* sp.; unnamed in the British Museum.—Wadi Howa, 30.x.32; near Bir Natrun, 13.xi.32.

## PLANIPENNIA.

(Determined by Mr. B. P. Uvarov.)

## MYRMELEONIDAE.

*Acanthachsis punctulata*, Navas.—Wadi Howa, 30.x.32.  
*Gepus invius*, Navas?—Tekro Oasis, sand and bushes, 19.x.32.

## ORTHOPTERA.

(Determined by Mr. B. P. Uvarov.)

## BLATTIDAE.

*Heterogamodes ursina quadrispina*, Chop.—South of Wadi Howa, rolling sand country, 11.xi.32.

## MANTIDAE.

*Blepharopsis medica*, F.—Selima Oasis, 18.xi.32.  
*Tarachodes rotundiceps*, Wern.?—Melit, bushes and mud, 8.xi.32.  
*Eremiaphila* sp., larva.—Desert between Kharga and J. 'Uweinat, 3.x.32.

## GRYLLIDAE.

*Liogryllus bimaculatus*, Deg.—Melit, bushes and mud, 8.xi.32; south of Wadi Howa, rolling sand country, 11.xi.32.

## TETTIGONIIDAE.

*Eurycorypha* sp.—Near Kutum, rock, 2.xi.32.

## ACRIDIDAE.

*Schistocerca gregaria*, Forsk., ph. *solitaria*.

This is the desert locust causing periodic depredations in Northern

Africa and south-western Asia, and the data on the distribution of its solitary phase in the Libyan Desert, collected by the expedition, are of great value, since little information from that country has been previously available.\* The following notes made by Mr. Prendergast are, therefore, well worth reproducing :

“ Very few specimens (of insects) were seen between El Fasher (Darfur) and Wadi Halfa. Locusts were seen at Merga in small quantities, and on one tree at Laqiya 'Umran 20 red and green locusts were seen but not in any other part of the oasis.” (The collection included two reddish females of *S. gregaria* ph. *solitaria*, taken at Laqiya 'Umran, on *Sellim* tree, *Acacia Ehrenbergiana*, November 17th, 1932, B.P.U.)

Between Cairo and El Fasher : “ In the case of locusts very few were seen and in each case were isolated specimens. No swarms were seen. They were very difficult to catch and often had to be shot with the collector's gun.” (Specimens at hand from near Tekro Oasis, “ sand sheet ”, one male and three females, yellow and reddish-yellow, belonging to ph. *solitaria* ; one female, ph. *transiens*, yellowish ; taken October 20th-21st, 1932, B. P. U.)—

*Anacridium moestum melanorhodon*, Wlk. (the Tree Locust).—Wadi Howa, 31. x. 32.

*Cataloipus* sp.—Wadi Howa, 31. x. 32.

*Platypterna lybica*, Salfi.—Wadi Howa, 30. x. 32.

*Hyalorrhapis canescens*, Sauss.—North-west of Tekro Oasis, 17. x. 32.

*Acridella procerca*, Klug.—Wadi Howa, 29. x. 32.

#### PHASMIDAE.

*Leptynia* ? sp., larva.—Malha, 9. xi. 32.

#### ARACHNIDA.

(Determined by Dr. S. Finnegan.)

#### SOLIFUGIDAE.

*Galeodes arabs*, C. L. Koch.—Wadi Howa, 29. x. 32.

#### SCORPIONES.

(Determined by Dr. S. Finnegan.)

#### BUTHIDAE.

*Buthus quinquestriatus*, Hmp. & Ehr.—Wadi Guroguro, 28. x. 32 ; desert between Kharga and J. 'Uweinat, 3. x. 32 ; Selima Oasis, 18. xi. 32.

\* See *Sudan Notes and Records*, 11 : 262.

## BOMBYLIIDAE IN THE NEW ZEALAND FAUNA.

BY S. I. PARAMONOV,

Zoological Museum, Academy of Sciences, Kiev, U.S.S.R. (Russia).

TONNOIR stated in a paper published in the *Records of the Canterbury Museum*, 1927, 3: 101-107, that the only representative of the family Bombyliidae so far known from New Zealand was not *Fraudator perspicuus* described by Hutton and belonging to another family, but a new species and the type of a new genus, *Tillyardomyia gracilis*, Tonnoir. This statement is inaccurate, since Schiner in the *Novara Reise*, Diptera, 1868 (pp. 129 and 133), definitely records the occurrence in New Zealand (Auckland) of two species of Bombyliidae, viz. *Neuria (Comptosia) bicolor* Macq. and *N. (C.) fasciata* Fabr. Both these species occur in Australia, as well. In the *Catalogue of Kertecz* (5: 78) there is a reference to the catalogue of New Zealand Diptera by Hutton (1881), who obviously did not doubt Schiner's records. It is surprising that Tonnoir should have ignored Hutton's catalogue. This may be simply due to an oversight, but I am inclined generally to question Tonnoir's statement that his new species is the only representative of the family Bombyliidae in New Zealand, and for the following reasons.

The family Bombyliidae is fairly ancient geologically and relatively rich in species, both in Australia and in the islands of the Pacific Ocean. If there are already known from New Zealand two species of the genus *Comptosia* (and there are probably more, since this genus is well represented in the Pacific fauna) and also a *Tillyardomyia*, well removed in the system from *Comptosia*, there is every reason to expect the occurrence in that country of other members of the family, although they may be rare and localized. One reason for the lack of data in this respect may be the actual poverty of the Bombyliid fauna of New Zealand, but an insufficiently thorough exploration of the local dipterous fauna may also be responsible. The poverty of New Zealand Bombyliid fauna finds a parallel case in the fauna of Fiji (see Bezzi, *Diptera Brachycera and Athericera of the Fiji Islands*), where no representatives of that family have been discovered. It appears that both Fiji and New Zealand represent the remnants of a vast continent later submerged by the Pacific Ocean. On the other hand, the family Bombyliidae is fairly well represented in the fauna of the Pacific islands and of Australia. This conflicting evidence can scarcely be discussed further until more is known on the Bombyliidae of New Zealand, and I would like to draw the particular attention of New Zealand entomologists to the necessity of carefully collecting these flies, which I would be very pleased to work out.

THE CORFIOTE SUBSPECIES OF *MANIOLA JURTINA*  
(LEP. SATYRIDAE).

BY P. P. GRAVES, F.R.E.S.

SINCE Corfu was first visited by entomologists its large *hispulla*-like race of *M. jurtina* has remained undescribed, and when mentioned has been reckoned on account of its size with *M. hispulla*. A comparison of a Corfu series with one from Portugal or from Sicily, where ssp. *hispulla* becomes *fortunata*, will dispel any idea of identifying the Corfiote insect with the West Mediterranean *jurtina*. On the other hand, *M. jurtina corfiothispulla*, as I propose to name it, makes a nearer approach to the West Mediterranean subspecies than any other near eastern "race" known to me. Large individual specimens of *jurtina* crop up from warm corners on the Aegean coast; Staudinger wrote of a large race which inhabited Naxos (*Lep. Griech.*, p. 79); and at Akbes and Shar Deresy on the Turco-Syrian borderland, and perhaps, too, at Marmarice in the south-west of Asia Minor, is found the giant ssp. *megala* Oberthür, largest of all *jurtina* races, but differing from that of Corfu, and at the same time from *hispulla* and *fortunata*. But I am not able to say whether *corfiothispulla* occurs outside the island of Corfu, or indeed whether any other *hispulla*-like race of *jurtina* occurs at all in the Levant, though I suspect that some such race will be found in Crete, from which I have seen but few specimens. In general the *jurtina* of the region between Bulgaria and the Amanus in the south-east and Cape Matapan in the south seem to me to be either *persica* Le Cerf, or transitions between it and the "races" of Austria, S. Germany, etc., which are, I suspect, as much related to *persica* as they are to the N. German and Scandinavian *jurtina*.

In the following description I have used the notation for various criteria of variation in this species which was published in the *Entomologist* (63 : 77), viz. :

*Male Characters.**Upperside of fore wings.*

A. Without any fulvous scaling, or with fulvous scaling confined to the ring round the ocellus.

B. With fulvous scaling in the form of ill-defined and inextensive interneural smears, more or less mixed with and suffused by dark scaling.

BC. With fulvous scaling in the form of a submarginal band extending from below the ocellus towards the tornus, veiled more or less considerably by dark scaling and broken by the neuration.

c. With a well-marked submarginal fulvous band broken by the

neuration as in BC, but otherwise largely or entirely free from dark scaling, cf. ssp. *iernes*, or with a fulvous ill-defined patch extending towards the cell, cf. *Maniola telmessia*, Z. The second form of c when compared with the first form is referred to as cl.

*Female Characters.*

*Upperside of hind wings.*

- D. With no fulvous scaling.
- E. With a fulvous point or patch in one interspace only.
- F. With fulvous points or patches in two and not more than two interspaces.
- G. With a fulvous band more or less suffused or not suffused by dark scaling in more than two interspaces.

*Fore wings, both surfaces.*

- H. With one or both of the subapical ocelli of the fore wing bipupilled on either surface.
- J. With the dark scaling of the subapical ocellus of the fore wing extended to vein 4 (first median), or connected therewith by dark scaling on either fore wing on either surface.
- HJ. Presenting the characters of H and J.

*Underside of hind wings.*

Y. In which the medial line of the underside of the hind wing is distally bordered with a streak, broken or complete, of bright yellow or orange. The streak represents the unsuffused remnant of a bright discal and post-discal band. To this character I have given the name of "Hübner's sign", since it is well shown in his figure of *hispulla*, and is very characteristic of that subspecies (*sensu lato*) and of *M. cypricola*, Graves.

In the following description colour references are taken from Ridgway's *Color Standards, and Color Nomenclature*. Measurements given represent the distance from the apex of the fore wing to the centre of the thorax multiplied by 2.

***Maniola jurtina*, L., ssp. *corfiiothispulla*, Graves, ssp. nova.**

♂. *Upperside*.—Ground-colour "sepia" (pl. xxix) to "clove brown" (pl. xl), usually of form A, less often BC or B. Resembles ssp. *fortunata* (and *hispulla*) in the markedly scalloped margin of the hind wing and the well-developed androconial brand. The fore wings, however, are less acuminate.

*Underside*.—The "raw sienna" (pl. iii) ground of the fore wings unbroken or not conspicuously broken by dark shading—a character common to the great majority of Mediterranean and Near Eastern *jurtina sens. lato*. The underside of the hind wings is more uniform in colour than in West Mediterranean *hispulla* and *fortunata*, varying from "Dresden brown" (pl. xv) to "tawny olive" or "snuff brown" (pl. xxix). The medial line and the darkening of the basal half of the wing are alike inconspicuous when present at all. The ocellated

spots are from 2 to 5 in number. Those in interspaces 2 and 5 are usually large—a characteristic of most Near Eastern *jurtina* races.

*Size*.—Average expanse of 33 specimens measured 55·8 mm. Largest 62 mm.; smallest 52 mm.

♀. *Upperside*.—Discoidal and submedial areas of fore wing usually well covered with “ochraceous orange” (pl. xv) or “orange” (pl. iii) scaling breaking widely into the post-discal band, and sometimes approaching *f. tithoniformis*, Verity. “Orange” scaling on hind wings usually in two interspaces (Grade F), and often in more than two (Grade G), though the band in the latter case is more suffused and fills less interspaces than is the rule in *ssp. hispulla* and *ssp. fortunata*.

*Underside*.—Ground-colour varying from “tawny olive” (pl. xxix) to “Dresden brown” (pl. xv); *f. grisea* and *f. violacea* are frequent. The medial line well marked. The area baseward of it not conspicuously darkened. Ocellated spots small.

*Size*.—Very large. Average expanse of 35 specimens measured 61·72 mm. Largest 66 mm.; smallest 54·5 mm.

*Locality*.—Island of Corfu, Greece.

*Holotype*.—♂ in my collection, No. T.S. 1.

*Allotype*.—♀ in my collection, AT.S.1. Paratypes in my collection.

From the above description it will be seen that *ssp. corfiotthis-*

	Portugal (1)	Sicily	Corfu (2)	Bulgaria, Black Sea coast	Bulgaria, Sofia district	Constantinople region, on both sides of Bosporus and Brous district.	Akbes, Shar Deres, Mar-marice, <i>ssp. megala</i> . (3)
♂♂ examined	81	121	33	70	68	58	8
Approximate average % of—							
A . . .	12·2	8·3	57·6	61·4	80·8	72·4	37·5
B . . .	5·1	1·7	15·1	32·9	19·2	25·9	37·5
BC . . .	82·7	84·2	27·3	5·7	0·0	1·7	25·0
C . . .	<i>Nil</i>	5·8	<i>Nil</i>	<i>Nil</i>	<i>Nil</i>	<i>Nil</i>	<i>Nil</i>
Av. expanse, mm.	55·22	56·00	55·80	51·02	51·14	50·94	63·80
♀♀ examined	85	150	35	125	65	68	13
Approximate average % of—							
D . . .	0·0	0·0	2·8	40·0	35·4	29·4	0·0
E . . .	1·1	0·0	11·5	40·0	32·3	33·9	7·7
F . . .	1·1	2·0	48·6	16·0	16·9	29·4	69·2
G . . .	97·8	98·0	37·1	4·0	15·4	7·3	23·1
H . . .	52·9	60·0	80·0	32·8	36·9	44·1	76·9
J . . .	58·8	67·0	60·0	28·0	23·1	26·4	61·5
HJ . . .	41·2	50·6	54·2	19·2	15·4	19·1	61·5
Y . . .	72·9	67·0	45·8	36·8	44·6	39·8	46·1
Av. expanse, mm.	57·80	59·96	61·72	53·70	53·54	55·90	65·22

*Note*.—(1) Type locality of *M. jurtina hispulla*, Hb.; (2) type locality of *M. jurtina corfiotthispulla*, meum; (3) mostly from type locality of *M. jurtina megala*, Obthr., or from Shar Deres, which is near Akbes.

*pulla* makes the nearest approach to the two West Mediterranean subspecies in the ♂. The restriction of the orange bands on the upperside of the hind wings differentiates the female from *hispulla* and *fortunata*, but the abundance of individuals with bipupillated post-apical ocellated spots on the fore wings is even more marked than in *fortunata*, Alph., and f. *grisea* and f. *violacea* are frequent as in the West Mediterranean. The comparative statistical table on p. 181 shows some of the respects in which *corfiothispulla* differs from neighbouring Near Eastern races, from typical *hispulla*, from the *fortunata* of Sicily, the nearest of its habitats to Corfu, and from ssp. *megala* from Marmarice and the N. Syrian Amanus Mountains.

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PLUSIA MONETA, F, AT REST.—In reply to C. Nicholson's inquiry under this heading on p. 141, the specimen, to which I referred on p. 65, which is before me now, is certainly *not* a newly-emerged one. The fringes, especially of the fore wings, are worn and it had undoubtedly flown. I am afraid I did not particularly notice the position of the front legs. By a coincidence I found a couple of larvae of this species on larkspur in my garden here this year, which duly pupated, but owing to an accident only one imago emerged successfully, sometime during June 24th, and I found it expanded and dry on its cocoon when I returned home in the evening. It was then resting head *upwards*. In view of C. Nicholson's note I decided to leave the insect untouched till the following day to see if it would change its position. On looking into the cage again the following morning I found the moth still upon its cocoon (which was pinned to the top of the cage so as to be in as nearly as possible the same position as it would have been in if hanging from the underside of a leaf of its food-plant), but in a reversed position, *i.e.* head *downward*. It was not, however, hanging perpendicularly on this occasion, because the claws of the front pair of legs were attached to the cocoon and held the insect at an angle. The front legs were extended as in Mr. Frohawk's illustration, but directed further back, and the tips of the third pair of legs extended just beyond the *tips* of the wings. So far as I could see the mesothoracic pair of legs were not functioning at all, but unfortunately in trying to make sure of this, I touched the moth and it moved. If one looks across the plate containing Mr. Frohawk's illustration, from the top right hand corner towards the bottom left hand corner, *i.e.* holding the plate nearly upside down, his picture of the insect gives a very fair idea of the position assumed except that the tips of the front and hind pairs of legs should be further back for the reversed position owing, no doubt, to the weight of the moth pressing it forward.—C. N. HAWKINS; 23, Dalebury Road, S.W. 17.

## NOTES ON BRACONIDAE: XIV.—ALYSIIDES.

By CLAUDE MORLEY, F.R.E.S., F.G.S., F.Z.S.

(Continued from p. 161.)

46. *Anisocyrta perdit*a, Hal.—New to England. Females were flying abundantly, along with the above *P. flavipes*, and actually settling upon *Agarics* in Shrubland Park, Suffolk, at the end of August, 1920.

47. *Adelura florimela*, Hal.—Doubtless a common species: in Lyndhurst fly-trap in New Forest in mid-July (F. C. Adams); Lichfield (Carr); Salisbury in Wilts and Barton Mills in Suffolk, both in mid-June.

48. *A. rufiventris*, Nees.—Doubtless a good deal commoner than at present supposed: a male at Greenings in Surrey in June, 1871 (Wilson Saunders), a female swept by me at Killarney in Ireland on June 11th, 1913, and another when collecting with Chitty at Foxhall near Ipswich on May 27th, 1907.

49. *A. isabella*, Hal.—Males were swept on the breck at Eriswell in early June, 1910, and found upon Monks Soham house-window on August 22nd, 1915.

50. *A. dictynna*, Marsh.—Captured by no one but Dr. Edward Capron, whose copy of Haliday's 1838 paper I possess. Doubtless taken around Shere, where he lived, in Surrey; nor does a male in my collection, captured at Reigate in the same county during July, 1872, by Wilson Saunders, and given me by his son, Edward Saunders, F.R.S., much extend its known distribution.

51, 52. *A. apii*, Curt.—The common and beneficial parasite of the ubiquitous Celery Fly (*Acidia heraclei*, L.) destroying *Apium graveolens* I have never met with curiously; though Charbonnier has given it me, with that host's puparia, whence it emerged at Bristol. But *A. sylvia*, Hal., is surely of fairly frequent occurrence, since I have it from I. of Wight (Morey), Surrey (Saunders), Matley Bog and Lyndhurst in New Forest, and Mablethorp in Lincs.

53, 54. *Prosapha speculum*, Hal.—The males of this species are found at Roydon Fen in Norfolk, and ubiquitous throughout Suffolk, from Bentley Woods to Brandon, where I have taken them on *Pinus sylvestris*; but the female, which is entirely distinct from the following species in its stigmal shape and hitherto *undescribed*, has occurred to me only at Foxhall on May 27th, 1907. *P. venusta*, Hal., is much commoner, the female being on the wing from June 19th to September 25th at Bristol and Olveston in Glos. (Charbonnier), Mildenhall and Tuddenham Fen in Suffolk; and the *undescribed* male, which differs from that of *P. speculum* in its elongate stigma, apically merging into the metacarpus, leaving exposed part of the first (André) and not second (Marshall,



1894) abscissa, I have from Rookley in I. of Wight (Morey), Harting in Sussex (Beaumont), Reigate in Surrey (Saunders), and all over Suffolk, including my Monks Soham windows, from May 5th to September 20th.

55, 56. *Mesocrina pugnatrix*, Marsh., remains unique from Devon; and *M. venatrix*, Marsh., seems hard to come at, as I have seen but a single pair, the female captured by Albert Piffard, at Felden in Herts, and the *undescribed* male, which differs only sexually in its longer, 39-jointed antennae, bred from the accompanying ferruginous and smooth puparium,  $4\frac{3}{4}$  mm. in length, of some (? *Pegomyia*) leaf-mining dipteran from dock at Bristol, in July, 1908. Marshall's type is from Wilts.

57. *Orthostigma pumila*, Nees.—Frequent upon Monks Soham windows only during August to mid-October. Recorded as parasitic upon the dipteran *Phora rufipes*, Mg., always abundant upon the same windows throughout the autumn and winter.

58. *Aspilota ruficornis*, Nees.—This pretty species with bright red abdomen is very common, though I have never found it "in woods, frequenting fungi"; on the contrary, both sexes are most usually swept in marshes, sometimes found feeding on flowers of *Angelica sylvestris* there; it seems rarer northward, as Notts can boast but one specimen (Prof. Carr, 1916, *Invert. Fauna*) and Staffs but two (Lance Carr, 1925-26). My examples are from Shalfleet, Rookley and Norton Wood in I. of Wight, Shere in Surrey, Felden in Herts, Groveley Wood in Wilts, Chippenham Fen in Cambs.; and Tuddenham Fen, Stanstead, Henstead, Sotterley Park, Wangford near Southwold, Claydon bridge and Foxhall, in Suffolk, extending from June 12th to September 25th.

59. *A. fulvicornis*, Hal.—Hitherto unique: "habitat Hiberniam borelaem, Augusto exeunte mihi lecta exemplar in Mus. Clm. Curtisii nunc asservatur", so we may suppose this female to be in Australia nowadays. Fortunately the late Mr. Emanuel A. Newbery, the eminent Coleopterist, was so good as to present me with a second female, secured by him while grubbing for beetles at Gwydir, near Trefriw in Wales during August, 1903.

60. *A. compressa*, Hal.—Probably really "uncommon" in June: I have beaten it from oaks at Wilverley in the New Forest, and found several females at Stanstead Wood in Suffolk only.

61. *A. concinna*, Hal.—Rare on Monks Soham house-windows from June to August, 1923-27.

62. *A. jaculans*, Hal.—Nothing is hitherto upon record respecting this species' economy: one female was taken by me in the act of ovipositing in a ground-fungus at Matley Bog in the New Forest on July 28th, 1927, doubtless parasitically upon the contained larvae of Mycetophilid gnats.

63, 64. *A. maculipes*, Hal.—I have found this quite a common kind, though the *undescribed* male, which differs merely sexually, has turned up but once—sitting upon a lime leaf in my Monks Soham garden on May 24th, 1908. Females are from Wilverley in the New Forest, Salisbury in Wilts, and both in garden and on windows at Monks Soham, from June 17th to July 24th. *A. praecipua*, Marsh., I do not know, though termed common.

65. *A. fuscicornis*, Hal.—Doubtless a ubiquitous insect: not rare in Staffs (L. Carr), Somerset, in June and August (Charbonnier), Spalding in Lincs: in Suffolk noticed at Tuddenham Fen, Depden, on *Hypericum perforatum* in Henham Park, and frequently on house-windows at Monks Soham, where it flew into artificial light on September 20th, 1908.

66. *A. nervosa*, Hal.—By September 14th, 1909, no less than 130♂♀—giving some idea of the individual abundance of the present genus and, perhaps, group—had emerged in a glass jar containing larvae of *Tyria (Euchelia) jacobaeae*, L., taken at Brandon in the preceding June, from whose frass had emerged numerous diptera of the species *Homalomya canicularis*, L., *Phora grata*, Wood, and *P. rufipes*, Mg., with a few *Pelethophila flava*, L. Most likely our parasite appeared at the expense of the first, because it was in predominating plenty. Also, with the above, were only *Choleva* sp. and *Forficula auricularia*, L. Elsewhere a single *A. nervosa* has alone occurred to me: on Monks Soham house-window on May 31st, 1925; two at Lichfield (Carr).

67. *A. insidiatrix*, Marsh.—Doubtless ubiquitous. Ventnor in I. of Wight; Harting in Sussex (Beaumont), Felden in Herts (Piffard) and Sherwood Forest in Notts: Suffolk, at Brandon, Tuddenham Fen, Assington Thicks, where it has been both beaten from birch bushes and taken in some numbers sitting upon a juicy ground-fungus (June 7th, 1899), Foxhall, and very frequent on Monks Soham house-windows, from May 7th to September 4th. On July 25th, 1917, a female (having eleven flagellar joints on the sinister side and but ten on the dexter!) emerged from a mass of frass of *Bombyx lanestrus* larvae found in Monks Soham, along with the Proctotrypid *Platygaster aegeus*, Walk; and on the 12th of the next month another of our Alysiids, along with the Dipteron *Drosophila fenestrarum*, Flin., upon which species both specimens had doubtless been parasitic.

68. *A. curta*, Marsh.—Certainly widely distributed, and probably common enough. I have found it at Ventnor in I. of Wight, Royden Fen in Norfolk, at Helpston Heath in Northants, upon house-windows at Southwold and lime-leaves at Monks Soham, always in the middle of June, except once on September 3rd. No economy is yet suggested.

(To be continued.)

## NOTES AND OBSERVATIONS.

EUGONIA POLYCHLOROS IN DORSET.—It is worth recording that this species has turned up here in its old haunts after many years. So far five have been seen.—LEONARD TATCHELL; Swanage, May 25th, 1933.

CENTENARY CELEBRATIONS OF THE ROYAL ENTOMOLOGICAL SOCIETY OF LONDON.—Elsewhere will be found the official account, as supplied to the Entomological Press, of the Centenary Meeting of our premier society. This is a very modest narrative. It makes no allusion, for example, to the diversion caused at the meeting by a certain noble lord who represented three distinct bodies, but had only one address to present; nor to the linguistic reception accorded on the same occasion to the head of a certain world-famous institute. Even though the events of the next two days can hardly be included in the record of the proceedings of the meeting of May 3rd, yet a reference might very excusably have been made to them. On the Thursday afternoon the Trustees of the British Museum gave a reception to the Society and the delegates in the new Whale Hall, where they were welcomed by Lord Crawford and Balcarres, and spent some time discussing tea and the historical treasures of the Entomological Department, some of which were specially exhibited for the occasion. In the evening the Society entertained its guests, through the kind offices of Sir Peter Chalmers Mitchell, at the Zoological Society's Gardens, concluding the day's programme after a very enjoyable and informal dinner in the Fellows' Restaurant, by visiting the Aquarium and other buildings. On Friday the overseas delegates were invited by Lord Rothschild to Tring. The day started badly, with a downpour of rain of a most penetrating variety, but the stoicism of the party was rewarded by bright sunshine on their arrival. Some time was passed here in obtaining a glimpse of the collections, and, refreshed in body if mentally a little bewildered, the party then proceeded to lunch at Whipsnade. An afternoon spent subsequently in marching and counter-marching in search of the animals reduced most of those present to a condition in which the return journey to town passed off both quickly and pleasantly; they slumbered. The celebrations culminated the same evening with a Government reception extended to the whole fellowship of the Society and to the delegates at Lancaster House, where the guests were received by Major Walter Eliot, Minister of Agriculture. It were a pity if these events left no record other than those in the Society's own keeping. Such an eminently successful and perfectly organized affair does great credit to the Society, and especially to its officers, and has undoubtedly still further enhanced its prestige. That so many societies and institutes, both at home and abroad, saw fit to appoint delegates to participate in the celebrations is a fine compliment and a sure symbol of the high esteem in which the Society is everywhere held.

MIGRATION RECORDS.—The following summary of 1933 observations under the S.E.U.S.S.'s scheme has kindly been supplied by

Capt. T. Dannreuther, Honorary Secretary of the Insect Immigration Committee :

(1) *Records of Insect Movement.*

(1) June 5th : *Colias croceus*, Yelverton, Devon, flying east against a light east wind at 12.45 p.m. a foot or two above ground across the Downs (H. G. Hurrell).

(2) May 12th : *Pieris brassicae*, Broadstairs, Kent. Many flying east to west all day of both sexes, good condition. Wind W. and N., cloudy with bright intervals, unsettled and cold (F. W. Frohawk).

(3) May 17th-22nd : One *P. brassicae* observed south of Dogger Bank (R. J. W.).

(4) May 20th-21st : *Pieris rapae* at Reading, Berks. Definite drift to the north singly at rate of 30-40 per hour, independent of wind and none returning (W. E. Hodson).

(5) May 22nd : Small white butterflies (? *P. rapae*), Droitwich, Worcester. Three or four per minute flying to north all morning and smaller numbers in afternoon. None in any other direction (A. Williams).

(6) June 2nd : *Pieris brassicae* seen from Ostend-Dover steamer : " When half-way across observed a migration of *Pieris brassicae*, which continued until the boat approached Dover, *i.e.* between 12.30 and 2.10 p.m., in bright sunlight with a cloudless sky. The butterflies were travelling leisurely to the westwards at a height of about 30 feet above sea-level, though a few casualties were seen in the water. They were wafted to the northwards by a light southerly or S.S.E. breeze and would probably land about the North Foreland. None alighted on board the steamer and no other species were seen. The butterflies were spread over a wide area and the numbers may be estimated from the fact that there was always at least one in sight and often as many as five or six at a time, all following the same course " (H. A. Gilbert).

(7) June 3rd : From 4 p.m. to dusk, a fair number of *Pieris brassicae* and *P. rapae* (rather more of the former) came in to Scolt Head, N.W. Norfolk coast, visiting flowers of bird's foot trefoil and thrift on the dunes in a dying S.E. breeze, the day having been warm and sunny, barometer 29.80. On June 4th they were arriving from the east or N.E. all day, in excellent trim, flying low over the sea, dipping into the troughs at roughly 15 miles per hour in spite of a rising S.E. wind, stiff at midday. Only a few were seen to come in before noon and those actually seen crossing the sea, apart from dunes specimens, totalled 78 between noon and 7.30 p.m. (25 male, 23 female, 23 not distinguished—flying too fast) and only 7 Small Whites (2 male, 2 female, 3 doubtful). One was knocked over by an incurling wave-crest, but flew up again from the surf. Arrived, some rested on hot shingle, others visited dune flowers or passed lightly on. On June 5th there was less immigration, one Large White being seen to arrive at 8.15 a.m. ; but there was a northward and N.W. movement inside the dunes throughout the morning (E. A. Ellis).

(8) May 19th: Start Lighthouse. 9 *Pyrameis cardui* and 17 *P. atalanta* came in from sea and went westwards (A. W. G.)

(9) June 4th: *Pyrameis atalanta*, Scolt Head, Norfolk. 10 a.m.: One coming in from sea and two others on the 5th. Also one flying from east to west over Salthouse Beach, Norfolk (E. A. Ellis).

(10) May 21st: *Hipocrita jacobaeae*. Noon at East Dudgeon Light Vessel, north of Norfolk. Five flying lazily to W.S.W. in easterly wind, force 2 to 3. Bright sun, temperature 58 (S. G. Sharman).

(11) May 23rd: *Hipocrita jacobaeae*. 7.30 p.m., 52° F., after very warm sunny and hazy day, three flying east in E.N.E. wind, force 2, at Outer Dowsing Light Vessel, 30 miles east of Spurn Point (J. W. R. Reeve).

(12) June 7th: *Plusia gamma*, at 4 a.m. at East Dudgeon Light Vessel, 22 miles north of Blakeney Point. Six flying W.S.W. in an E.S.E. wind, 1 to 2, temperature 58. Flew round light. One specimen sent in good condition but tired (S. G. Sharman)

## (2) *First Appearances Reported.*

*Pyrameis cardui*: March 29th, Timoleague, co. Cork (G. E. L.); April 2nd, Haslemere (R. C. B.); April 28th, Shiplake, Oxon (J. J. W.); May 3rd, Chichester, fairly plentiful (S. M.); May 18th, Horsham (J. S. D.); Land's End to Lizard 12 worn (B. W. A.); May 20th, several places between Dorset and Derbyshire Hills; May 21st, several places between London and Norfolk; May 22nd, Sunderland, three (F. C. G.); May 23rd, Westwell, Kent, egg-laying; in June a colony appeared at Padstow, Cornwall; April 19th, Swindon (D. P. H.); May 6th, Fareham (A. H. S.); May 8th, Littlehampton (H. C. D. F.); May 22nd, Wimbledon (R. E. W.); May 30th, Folkestone (E. C. J.); June 4th, St. Leonards (A. B.); June 5th, Lydd, "30 seen on Romney Marsh" (G. E. A.); June 4th-7th, Woolacombe, "a dozen daily" (W. B. T.); July 4th, Chanctonbury Ring, Sussex (700 ft.), six miles north of Worthing; June 10th-24th, Isle of Purbeck, abundant (L. Tatchell).

*Pyrameis atalanta*: March 3rd, Southampton (W. F.); March 29th, Timoleague (G. E. L.); April 2nd, Shiplake, Oxon (W. S.); April 7th, Reading (H. L. P.); May 6th, Chichester, and Ashtead, Surrey. After May 18th many records, mostly in the south or Midlands. On June 4th, six at Ulverston, N. W. Lancs, and Dunnet Head, Caithness, and at Wick on June 7th (L. D. D.); January 9th, Plymouth (A. L. K.); March 11th, Start Lighthouse, three (A. W. G.); March 27th, Tonbridge (R. N. T.); May 14th, St. Leonards (A. B.); May 22nd, Wimbledon (A. R. W.); June 5th, Romney Marsh, several (G. E. A.); June 4th-7th, Woolacombe, N. Devon, three or four daily; June 29th, Ashtead (F. W. Frohawk).

*Colias croceus (edusa)*; June 5th, Yelverton, Devon (H. G. H.), and Mount's Bay, Cornwall (M. V. R.); June 6th, Swanage Downs (A. A.); Glastonbury (F. W. Frohawk); June 13th, Neath, Glamorgan, female (J. W. D.); June 20th, Grange-over-Sands, Lancs (A. E. Wright); all

single specimens; June 10th-24th, Isle of Purbeck, abundant, mostly worn (L. Tatchell).

*Acherontia atropos*: June 3rd, Ramsgate, worn male (A. G. P.).

*Macroglossa stellatarum*: March 22nd, Hancock, Northumberland (G. W. T.); Easter week, Sandhurst, Kent (G. V. B.); May 28th, Ross-on-Wye (A. E. A. G.); June 5th, Ramsgate (A. G. P.), and Stratford-on-Avon, two, also five on June 7th, and others later (P.S.S.); June 8th, St. Leonards-on-Sea (G. E. A.); June 21st and 22nd, Grange-over-Sands, Lancs (A. E. Wright).

*Pieris rapae*: March 28th, Hastings (G. E. A.). Normal since, but abnormal numbers reported at Shiplake, Oxon, April 6th-28th (W. S.).

*P. brassicae*: April 30th, temperature 60, Hastings (T. D.).

*Hipocrita jacobaeae*: Common in Norfolk early in May.

*Agrotis saucia*, Hb.: Beccles, May 30th.

*Plusia gamma*: May 4th, Chichester (S. M.); May 20th, Ross-on-Wye, worn (A. E. A. G.); June 3rd, Glastonbury, "numerous" (F. W. Frohawk); June 6th, Great Yarmouth (C. G. B. D.); June 15th, Swindon, about 30 in grassy field (D. P. H.).

*Percnoptilota fluviata*: May 5th, Cosham, Hants (A. H. S.).

*Nomophila noctuella*, De: May 12th, Pulborough, Sussex (C. A.); May 20th, Hastings, four, a pair *in cop.* 9 p.m. (T. D.)

*Pionea ferrugalis*, Hb.: May 29th, Hastings, 10 p.m. (T. D.).

*Aeschna mixta*: June 2nd, Hastings (T. D.);

*Libellula quadrimaculata*: Scolt Head, Norfolk, hawking (E. A. E.)

### (3) Other Records of Insects at Sea.

At Owers Light Vessel, 7 miles off Selsey, May 29th, 9 30 p.m., during passing thunder-storms, temperature 55°, barometer 29.82, wind west, force 2: One Cinnabar, *Hipocrita jacobaeae* and two Brimstone Moths, *Rumix (Opisthograptis) luteolata*. Specimens sent in (H. G. Hollis).

At Outer Dowsing, 30 miles east of Norfolk. May 16th, one Cinnabar, *Hipocrita jacobaeae* (see also Records of Insect Movement). Specimen sent in (J. W. R. Reeve).

At East Dudgeon Light Vessel, 22 miles north of Blakeney Point. May 29th, at night in thundery weather and light N.E. wind, temperature 53, fluttering round lantern, four Brown Silver-line Moths, *Lozogramma (Panagra) petrarua*. Specimen sent in (S. G. Sharman).

At sea, 12 miles off Winterton, Norfolk. May 8th, a Puss Moth, *Dicranura vinula*, was taken at 10 a.m. on board a Lowestoft fishing boat in a light N.E. wind. (Several of this species were recorded as newly emerged in Norfolk at this time and one was taken at Gorleston on May 16th.)

### (4) Notes.

This year's records show a tendency for new arrivals to come in singly. *P. cardui* appear to favour the Downs and hill-tops, where they are usually found on bare ground or grass. *P. atalanta* seem to

seek the flowers of sheltered gardens in preference. *P. brassicae* move leisurely in warm calm weather following the same track in a loose scattered flock near the surface. Some correspondents assert that some migrant insects occupy the same perches or flowering plants from year to year just as certain migrant birds are known to do, but why new generations select them is not yet known.—T. D.

## RECENT LITERATURE.

*Animal Colour and Adornment.* By Major R. W. G. HINGSTON, M.C., M.B. 8vo. 411 pp. London: Edward Arnold & Co., 1933.

This is a remarkable book, and destined probably to mark at last a definite move forward after a long period of stagnation. As the author remarks, the Darwinian theory of sexual selection has always proved definitely unsatisfying in its attempt to explain all the brilliant colours and adornments which are such conspicuous features of so many animals; the new hypothesis which he advances has at any rate the merit of supplying a comprehensive explanation, be it accepted or not. To explain his theory he uses as an example the lion, an essentially protectively coloured animal, which has, however, a black or dark brown mane, tail tuft and patches behind the ear. These normally are hidden, but when the lion is angered they are displayed prominently, threateningly, at the adversary. This is the essence of the theory; these conspicuous markings are menaces, used for intimidation. In the case of the lion, as the author points out, man has long ago recognized their meaning, and no doubt so have all the other animals it encounters. Major Hingston calls these threatening colours; the combination of these colours with those that their bearers use for concealment he speaks of throughout as colour-conflict, a term expressive of the two fundamental emotions, anger and fear, with which, in his opinion, the two types are definitely and very closely related.

In the insects this theory is closely bound up with the older, now widely accepted, theory of warning coloration; and it may not be out of place to suggest that in that theory it probably had its genesis, for it is, in a sense, but an extension of it. It is peculiarly in insects that the sexual selection hypothesis breaks down; the frequently noted pairings of a freshly emerged female butterfly with an absolute rag of a male precludes any possibility of believing that the (anthropomorphically) handsomest butterflies have been evolved by any such method. The other explanation also often offered that the brilliant colours of so many male butterflies are, so to speak, merely the exuberant overflow of suitable material, is really but a begging of the question. Major Hingston's argument appears to be something of this kind: Since all animals fight for existence, both with general enemies, and with their own kind; and it has been shown that in mammals, birds, etc., their conspicuous colours are but weapons in the battle; then these bright colours of butterflies are the same.

A *Morpho* sailing vividly in the sun is not merely enjoying itself; it is saying in effect to its rivals "See what a fine fellow I am: touch me if you dare"; and its general enemies it does not fear because its power of flight will save it from them. Moreover, the moment it settles its protective underside conceals it. Basking he explains on the same grounds. Species that are definitely distasteful carry this attitude further, make no attempt at escape from general enemies, and, indeed, as a rule, are devoid of protective colour devices. Fantastic as this theory seems, in its application to the butterflies, yet it should not be too hastily rejected. To speak of butterflies "fighting" with their colours, of night-flying moths "fighting" with their senses of smell, and of glow-worms with their lights indeed sounds fantastic; but it must be remembered that suitable words are limited, and that the author uses the terms "fighting" and "threatening" throughout his book in order to show how universal is the application of his theory.

Here and there in the chapter on Insects there are clearly errors and misconceptions which no doubt would not have crept in on more careful consideration; or it may be that limitations of space have precluded the fuller discussion that is essential. The relation of the theory of mimicry to the author's ideas, for example, is deliberately excluded; but, since purely protective devices alone are here concerned, this is perhaps only natural. The statement on p. 205 that "if the reader is satisfied that the colour displays of caterpillars have the same meaning as those of vertebrates (*i.e.* threatening and defensive), then he must abandon sexual selection" savours of a degree of illogicality which the author can hardly have intended, even allowing for his Irish nationality. And his suggestion (p. 190) that the anal ocelli and tails of *Lycaenidae* are threatening is open to serious objection, inasmuch as they are generally recognized to be a definite attraction (presumably in order to save the real head of the insect from attack) to insectivorous animals, although it must be admitted that the attraction may be accompanied by murderous intent. When dealing with the question of seasonal dimorphism in butterflies, again, Major Hingston has fallen into a trap, for his very pretty argument is based on unsound premises. Indeed, the application of the author's theory to the world of insects is fraught with many difficulties. It is to be hoped, however, that such criticism as may be levelled at him on this score may but serve to clarify his ideas. It would be the greatest pity to pour scorn upon the many novel suggestions contained in this volume simply because they seem at first sight to run gravely contrary to the generally accepted view. And if in his concluding sentences he seems to attribute too much to the orthogenetic urge of his fear-anger complex, and too little to the immense force of natural selection, it is perhaps only due to a not unnatural enthusiasm for his subject. There is little doubt, however, that in this book Major Hingston has made the most useful contribution of recent years to the understanding of those infinitely complex processes of evolution for which no single theory has yet afforded, or is ever likely to provide, a complete solution.



## SOCIETIES.

ROYAL ENTOMOLOGICAL SOCIETY OF LONDON.—*Centenary Meeting, May 3rd, 1933* (held in the rooms of the Royal Geographical Society, Kensington Gore).—The President Prof. E. B. Poulton, F.R.S., in the Chair.—There were present 126 Delegates (of whom 42 were Fellows), 92 other Fellows and 162 guests.—The minutes of the last meeting were read and confirmed.—The President read a communication from the Home Office announcing that His Majesty had been pleased to command that the Society be in future known as the "Royal Entomological Society of London", and it was agreed that a telegram of thanks be dispatched to the Home Secretary.—Dr. Neave, on behalf of the Council, proposed to the meeting that Prof. E. B. Poulton, F.R.S., be elected Honorary Life President, and this was agreed with acclamation. He also proposed the names of Commander J. J. Walker, the Rev. George Wheeler and Mr. W. G. Sheldon for election to Special Life Fellowships, and they were also elected with acclamation.—Prof. E. B. Poulton, F.R.S., made a speech of welcome to the delegates to which Sir Peter Chalmers Mitchell, C.B.E., F.R.S., replied on behalf of the British delegates and Prof. P. Lesne on behalf of the foreign delegates.—The Secretary read a list of the institutions and also of private individuals who had sent addresses and messages of congratulation. The delegates from institutions at home and abroad were then received individually, and they presented addresses in many cases, the total number received being 85.—The President moved a vote of thanks to the Royal Geographical Society for placing their meeting room at the disposal of the Society for its Centenary Meeting, and this was agreed with acclamation.—In the evening a further meeting was held at 41, Queen's Gate, which took the form of a *conversazione*, at which the following exhibits were made by: Rothamsted Experimental Station (Dr. C. B. Williams); the Committee for the Protection of British Insects (Mr. H. M. Edelsten); Dr. W. H. Thorpe; Mr. H. Main; Mr. G. H. Mansbridge; Mr. S. Maulik; the Imperial Institute of Entomology (Mr. B. P. Uvarov); the Zoological Museum, Tring (Dr. K. Jordan, F.R.S.); Dr. Hugh Scott; Dr. D. S. MacLagan; Dr. A. F. Rosa; Mr. Ray Palmer; Dr. E. A. Cockayne; the Ministry of Agriculture, Plant Pathological Laboratory, Harpenden (Mr. J. C. F. Fryer); Mr. C. G. M. de Worms; Mr. L. C. Bushby; Mr. H. StJ. K. Donisthorpe; Prof. E. B. Poulton, F.R.S.; the Entomological Society of London; Mr. L. W. Newman; Prof. G. D. Hale Carpenter; the London School of Hygiene and Tropical Medicine (Dr. V. B. Wigglesworth, Mr. H. S. Leeson, Mr. J. D. Gillett); the Imperial Institute of Entomology, Farnham House Laboratory (Dr. W. R. Thompson, F.R.S., Mr. E. Cameron, Mr. S. Garthside, Mr. K. R. S. Morris, Mr. J. E. Moss); the Imperial College of Science Biological Field Station, Slough (Mr. G. V. B. Herford, Mrs. O. W. Richards, Dr. A. B. T. Page); and Dr. H. Eltringham, F.R.S.—**S. A. NEAVE, Hon. Sec.**

# THE ENTOMOLOGIST

VOL. LXVI.]

SEPTEMBER, 1933.

[No. 844]

## MORPHO ACHILLES L.

By W. G. SHELDON.

IF one wants to gaze upon some of the most gorgeous colour schemes of Nature, a journey, or series of journeys, to the tropics is necessary, for there, so far as insects are concerned, they are to be found.

Upon no organism has the great mother been more lavish of colour than on certain groups of the Rhopalocera, and of these few genera are as brilliant as the *Morphidae*. Seitz gives some thirty species of *Morpho*, all of course confined to South and Central America.

The most widely distributed species is undoubtedly *Morpho achilles* L., formerly known as *M. peleides* Koll., whose range extends from Mexico to Southern Brazil; it is found in suitable localities throughout the whole of this region. It is a very magnificent species, the wings are a brilliant azure blue with wide dark borders. The males have a wing expanse of about six inches, and the females considerably more. It is not quite such a bright-coloured butterfly as *M. menelaus* and some other species, but in my opinion equally beautiful.

The flight of all the *Morphida* I have seen is very striking. It is usually described as flopping, but this expression does not do justice to its grace and charm. I should describe it as a soaring flight; each soar, during which the wings are motionless, will carry the butterfly many yards; at the end of it there is a momentary pause, a single flap of the wings, and then another soar. There is nothing at all resembling it in any British, or European, or even American species I am acquainted with. The nearest flight I can think of is that of a rare British bird, Montagu's Harrier.

*M. achilles* haunts chiefly the forest-clad gorges that seam the mountains and hills of its geographical area, but is not infrequently met with in a forest path or ride amongst the hills; but even when it comes into the open it seems never to fly more than a yard or two from the edge of the jungle. When not pursued it flies at a good pace, say seven or eight miles an hour, but, if struck at, doubles and twists about frantically, and in a very few seconds has taken a dive into the adjoining thick growth, where of course it is perfectly safe. It will be understood that under these circumstances capture with the net is not very profitable. There are, however, other ways of circumventing *achilles*. An over-ripe banana hung up in its haunts

is attractive, and so is sugar on the tree-trunks—two of the half dozen captures I made were acquired by this means, including my largest female. Probably the most prolific way of acquiring specimens, if a large bag is desired, is to take a pinned and set example to its haunts, and place it in a prominent position; if this is done, each *achilles* as it passes will take a turn or two round the decoy, allowing itself to be netted without much difficulty.

Its wondrous beauty in flight will, however, be the chief attraction to all true naturalists; the colour as it flies along is the brightest and yet softest blue, which, combined with the size—it appears at least as large as an English blackbird—and the contrast between the colour of the butterfly and the deep green of the adjacent jungle, make it one of the most gorgeous sights even the tropics can boast of. Bates in *Naturalist on the Amazons* states that a smaller species, *M. rhetenor*, “when it flaps its wings, and the blue surface flashes in the sunlight, is visible a quarter of a mile off”.

I did not see an *achilles* anything like a quarter of a mile off, but I can quite believe that under similar conditions it would be visible several hundred yards away.

My first acquaintance with *achilles* was in December, 1929. The ship I had travelled from England in had called at Port Limon in Costa Rica, to load up with bananas; and another passenger—non-entomological—and myself had taken advantage of the stay to make a short expedition into the forest to the north of that town. Only one example was seen; it was pursued by my friend, armed with a small net I had brought with me; the capture looked simple enough in the wide forest ride along which the butterfly was flying, but the first strike was not successful, and a headlong dive into the jungle prevented a second.

At the end of last year, during a further visit to the Caribbean, I made a short stay at the delightful American Nature Reserve of Barro-Colorado in the Panama Canal Zone. Here at least three species of *Morpho* were seen—*M. achilles*, the even more brilliant though not more beautiful *M. amathonte centralis* Stdgr., and a large brown and white species. Of the first two named I managed to capture an example, but the latter kept to the tree-tops, and did not come low enough to give even my long-handled net a chance.

It was not, however, until I reached Trinidad, a little later, that *achilles*, of the race *insularis*, was to be seen frequently.

Within a short distance of the Port of Spain, where I spent the month of January and part of February, one or two examples were encountered most days during my wanderings in the mountains and forests of that beautiful island.

A certain mountain track, some three or four miles from where I was staying, crosses a forest-clad gorge, down which trickles a

small stream. Just where this crosses the track there is a level space of perhaps a dozen square yards, and here, if one sat down and waited, an *achilles* would pass up or down the gorge every few minutes between the hours of 10 a.m. and 2 or 3 p.m. It was a spot of wonderful charm, for in addition to the *Morphos*, it was a favourite haunt of the graceful *Heliconius*, brilliant red and black *Catagramma*, blue and black swift-flying *Prepona*, and many other brilliant butterflies. It was also a drinking-place of the humming-birds, one or more of which were almost continuously poised on the wing, drinking at the trickle of water as it fell over the face of a sloping rock.

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APHOMIA GULARIS (ZELL.) AND OTHER RARE WAREHOUSE MOTHS.  
—I have been able to devote a fair amount of time to investigating *Aphomia gularis* in the dried fruit warehouses of London, and I have found it frequently, and am convinced that had I started operations a fortnight earlier, I would have found it almost abundant in places where Spanish almonds are stored. In one place I visited, the cobwebs in the corners and round the ceiling were full of the eviscerated remains of this species. I was fortunate in finding a pair *in cop.*, and secured a batch of about seventy eggs. These were deposited on almonds on August 2nd, and on the 7th young larvae appeared. These young larvae are exceedingly active, and are of a pinkish-yellow colour with amber brown head and plates. The egg, which I had hoped would have remained long enough in that stage to permit of its being photographed, was, as far as I could discern with a fairly strong magnifying glass, horizontal-ovate, lightly reticulated, light grey in colour, and smaller than one would expect for a moth of this size. They were laid in rough batches, one lot along a fold in the skin of an almond, and the other batches tightly pressed in round the points of contact between the almonds and the tin in which they were placed.

In another sale-room, from time to time, from the end of June onwards, I have been fortunate in securing six specimens of what I take to be *Myelois phoenicis* Drnt., an Algerian species attached to the dried fruits of the date palm. This determination is being investigated by Mr. Tams, whose report I hope to get in due course. [Since confirmed as *M. phoenicis* by Mr. Tams.—ED.]

I have also taken several specimens of *Myelois ceratoniae* Zell., another species attached to dates, but also known to affect both Algerian and Cyprus locust beans and quinces from South Africa as well as from the Mediterranean countries. It may be that the exceptionally fine summer has enabled these exotic insects to attain maturity in this country, for, at any rate in the case of *M. phoenicis*, very little material seems to have come to hand previously; I have a female of this species at present confined with a good supply of food in the hope of securing ova, but up to the present I have not observed any.—STANLEY N. A. JACOBS.

## ON THE TYPES OF CERTAIN BUTTERFLY GENERA.

BY FRANCIS HEMMING, C.B.E.

IN the course of a systematic study of the older generic names proposed for the butterflies of the holarctic region, which I hope to publish later, I have come across a number of names for which, so far as I have been able to ascertain, no valid type has ever been selected. In some cases (*e.g. Earina* Speyer), the species in question belong to a genus having some older valid name and no one has thought it worth while to select a type, though clearly this should be done in order to assign to the name a definite position in synonymic lists. In other cases, names have been unaccountably neglected (*e.g. Graphium* Scop.). For such names, which often concern a number of heterogeneous species, it is especially desirable that a type should be selected, as otherwise there is always the danger that someone may make a selection which would have the effect of upsetting some widely-used but later generic name. Finally, there are a considerable number of generic names which possess no validly selected type, as the species that have been selected as their types were not included in the first work in which the name was published. Thus occurs mainly in the case of the works of Hübner. Thus, most of the generic names proposed in the *Tentamen* possess no valid types, as the species selected on the basis of the *Tentamen* being the original publication were not included under the name on the next occasion on which it was published. I have been criticized\* for accepting generic names published without explanatory text by Hübner in his *Exot. Schmettl.*, but this criticism has no force. Shortly, the position is that the International Code prescribes (Article 25) that a generic name, to be valid, must be "accompanied by an indication, or a definition, or a description". The question is whether the publication of a generic name in conjunction with one or more species constitutes "an indication" within the meaning of the Code. In the past it has been almost invariably so accepted and especially since the endorsement of the practice by Scudder in his famous Historical Sketch (1875, *Proc. Amer. Acad. Arts Sci.*, Boston 10) the principle has hardly been seriously called in question. (It may be noted parenthetically that the validity of many well-known names turns on this question, *e.g. Callophrys* and the other names proposed by Billberg, *Archon* and other names proposed by Hübner in the *Syst. Alph. Verz.*, etc.). The validity of the opinion expressed above was explicitly recognized by the International Zoological Congress

\* Prout, L. B., 1932, *Entomologist*, 65: 8.

in 1927, who, on the unanimous recommendation of the International Commission on Zoological Nomenclature, agreed to amend Article 25 to provide that generic names proposed *after December 31st, 1930*, must, to be valid, be accompanied with "a summary of characters (*seu* diagnosis : *seu* definition : *seu* condensed description) which differentiate or distinguish the genus . . . from other genera . . .", while at the same time expressly laying down that as regards genera published *prior to January 1st, 1931*, the old rule (already quoted) that "an indication" was sufficient should remain in force. This clear-cut definition can only mean that a generic name proposed before that date is valid even if it is accompanied by no description.

In the following list of fixations I have, wherever possible, selected as the type a species that is already the type of some genus having an older valid name. Where this is not possible I have selected as the type the species the selection of which causes the least change in existing practice. If anyone reading this paper is aware of a valid fixation of any of the generic names here dealt with, I shall be very grateful if he will be so kind as to send me particulars to 18, Glebe Place, Chelsea, London, S.W. 3, so that the necessary correction may be embodied in my projected larger paper on this subject.

#### NYMPHALIDAE.

**Aeola** Billberg. 1820. Enum. Ins. : 78.

Type — *Aeola iris* Linn.

The name is thus a synonym of *Apatura* Fab.

**Alcyoneis** Hübner. 1818. Verz. bekannt. Schmett. (3) : 35.

Type = *Alcyoneis almane* Hb. (= *amana* Linn.).

The name is not required, as *amana* is referable to *Precis* Hb., which has page priority over *Alcyoneis*.

**Argyrea** Billberg. 1820. Enum. Ins. : 77.

Type = *Argyrea paphia* Linn.

The name is thus a synonym of *Argynnis* Fab. It is further invalid as it is a homonym of *Argyria* Hb. (1818).

**Dryas** Hübner. [1806-c. 1819]. Exot. Schmett. 1 pl. [40]–[44].

Type = *Dryas liriopæ* Cram.

Fortunately this name is not required, as *liriopæ* is congeneric with *tharos* Dru., the type of *Phyciodes* Hb. (1818).

**Hamadryas** Hübner. [1806-c. 1819]. *Ibid.* 1 pl. [45]–[55].

Type = *Hamadryas feronia* Linn.

As in the case of *Dryas*, this name is unnecessary, the type, *feronia*, being congeneric with *chloe* Stoll, which is the type of the older *Ageronia* Hb. (1818).

**Heliconius** Latreille. 1804. Nouv. Dict. H. N. **24** (Tab.) : 185, 199.

Type = *Heliconius charitonia* Fab. (= *charithonia* Linn.).

The reason that no valid type has ever been selected for *Heliconius* is that Latreille's *Hist. Nat. Crust. Ins.*, published in the following year (1805), in which a different species was cited, has almost always been taken as the work in which the name was first published.

**Mellicta** Billberg. 1820. Enum. Ins. : 77.

Type = *Mellicta cinxia* Linn.

The name is thus a synonym of *Melitaea* Fab.

**Najas** Hübner. [1806-c. 1819]. Exot. Schmett. **1** pl. [57]-[67].

Type = *Najas pipleis* Linn.

The selection of *pipleis* as the type reduces *Najas* to a synonym of *Hypolimnias* Hb. (1818), of which also *pipleis* is the type.

**Synchloë** Doubleday. 1848. Gen. Diurn. Lep. (1) : 185.

Type = *Synchloë janais* Dru.

The name is invalid as it is a homonym of *Synchloë* Hb. (1818). The type selected, *janais*, is the same as that of the later valid name *Chlosyne* Butl. (1870).

#### AMATHUSIIDAE.

**Faunis** Hübner. 1818. Verz. bekannt. Schmett. (4) : 55.

Type = *Faunis eumea* Cram.

This name has been wrongly rejected (as being pre-occupied) by a number of authors following an erroneous statement by Scudder (1875).

#### SATYRIDAE.

**Epigea** Hübner. 1818. Verz. bekannt. Schmett. (4) : 62.

Type = *Epigea ligea* Linn.

The genus is thus a synonym of *Erebia* Dalm.

**Gorgo** Hübner. 1818. *Ibid.* (4) : 64.

Type = *Gorgo ceto* Hb.

This, and the following, name are not required, since the species selected as the types of both belong to *Erebia* Dalm.

**Marica** Hübner. 1818. *Ibid.* (4) : 63.

Type = *Marica stygne* Ochs.

See note under *Gorgo*.

**Phorcis** Hübner. 1818. *Ibid.* (4) : 62.

Type = *Phorcis epistygne* Hb.

This, and the following, name are not required, for the same reason as *Gorgo*.

**Syngea** Hübner. 1818. *Ibid.* (4) : 62.

Type = *Syngea pronoe* Esp.

**Tanaoptera** Billberg. 1820. Enum. Ins. : 79.

Type = *Tanaoptera europa* Fab.

The genus is thus a synonym of *Lethe* Hb.

#### DANAIDAE.

**Epimetes** Billberg. 1820. Enum. Ins. : 77.

Type = *Epimetes polymnia* Linn.

The name is thus a synonym of *Mechanitis* Fab.

#### LYCAENIDAE.

**Rusticus** Hübner. [1806-c. 1819]. Exot. Schmett. 1 pl. [97]-[105].

Type = *Rusticus calanus* Hb.

This name is not required, as *calanus* is congeneric with *melinus* Hb., the type of *Strymon* Hb. (1818).

#### PIERIDAE.

**Andropodum** Hübner. 1822. Syst. Alph. Verz. : 2-5, 7-9.

Type = *Andropodum brassicae* Linn.

The species usually regarded as the type (*ilaire* God.) was not included in the above work. The selection of *brassicae* as the type makes the name a synonym of *Pieris* Schr. (1801).

**Earina** Speyer. 1839. Isis (Oken) 1839 : 98.

Type = *Earina rhamni* Linn.

The genus is thus a synonym of *Gonepteryx* Leach (1815).

#### PAPILIONIDAE.

**Argyreus** Scopoli. 1777. Intr. Hist. Nat. : 431.

Type = *Argyreus nireus* Linn.

**Clytia** Swainson. 1833. Zool. Illust. (2) 3 pl. 120.

Type = *Clytia clytia* Linn.

The name is invalid as it is a homonym of *Clytia* Lamouroux (1812).

**Graphium** Scopoli. 1777. Intr. Hist. Nat. : 433.

Type : *Graphium sarpedon* Linn.

**Polydorus** Swainson. 1833. Zool. Illust. (2) 3 pl. 101.

Type = *Polydorus romulus* Cram.

The name is a synonym of *Princeps* Hb.

**Princeps** Hübner. [1806-c. 1819]. Exot. Schmett. 1 pl. [106]-[134]

Type = *Princeps pammon* Linn.

**Therius** Billberg. 1820. Enum. Ins. : 75.

Type : *Therius apollo* Linn.

The name is thus a synonym of *Parnassius* Latr.



**Thoas** Swainson. 1833. Zool. Illust. (2) 3 pl. 121.

Type = *Thoas paris* Linn.

The name is thus a synonym of *Achillides* Hb.

#### HESPERIDAE.

**Astycus** Hübner. 1822. Syst. Alph. Verz. : 1, 3, 5, 6, 8-10.

Type = *Astycus tages* Linn.

The usually accepted type (*augias*) was not included in the above work. The selection of *tages* as the type makes the name a synonym of *Erynnis* Schr. (1801).

**Thymelinus** Stephens. 1835, January. Ill. Brit. Ent. Haustellata 4 : 405.

Type = *Thymelinus actaeon* Rott.

The name is thus a synonym of *Thymelicus* Hb., for which it is probably a misprint.

**Urbanus** Hübner. [1806-c. 1819]. Exot. Schmett 1 pl. [149]-[160].

Type = *Urbanus proteus* Linn.

**ZYGAENA FILIPENDULAE AB. CHRYSANTHEMI** --On July 20th last I took on the downs above Winchester a perfect female of this aberration of *Zygaena filipendulae* --Mrs HAMILTON LEIGH ; Bindon House, Langford Budville, Taunton. Somerset.

**COMMA BUTTERFLY IN NORTH KENT.** --Whether *Polyommata c-album* has been recorded in a natural--wild--state in the above part I cannot say ; therefore it seems worth recording that one was feeding this morning, August 2nd, on *Buddleia* in our garden, about five miles south of Gravesend. For some minutes it fed and sat close to me, clearly seen. It will be interesting to see whether the species will get acclimatized to this hilly part of Kent, much swept by south-west winds in winter, and with that idea in view, this morning's *Polyommata* was left alive.--FREDERICK D. WELCH, M.R.C.S., F.S.S. ; Hartley, Longfield, Kent

**YELLOW FORMS OF PARARGE AEGERIA.** --With reference to the note on a yellow form of *Pararge aegeria*, in the August number of the *Entomologist*, I recall a visit to Lyme Regis some fifteen or more years ago, when I saw an example of *aegeria* of such an intense fulvous colour that I at first mistook it for *Pararge megera*. The late J. J. Lister, who was with me at the time, told me that the spring brood--in that locality--was often or usually of that colour. My visit was quite early in the year, probably some time in April, so the specimen I saw must have been of the spring brood.--E. ERNEST GREEN ; Way's End, Camberley, Surrey.

## NOTES ON BRACONIDAE: XIV.—ALYSIIDES.

BY CLAUDE MORLEY, F.R.E.S., F.G.S., F.Z.S.

(Concluded from p. 185)

69. *A. concolor*, Nees.—Possibly abundant, but apparently a geophilous species, though two to three times taken flying at Southwold and Monks Soham house-windows. In flood-refuse at Bubwith in Yorks (Newbery), and a male found with *Formica fusca* at Mickleham in Surrey on May 1st, 1910 (in coll. Donisthorpe). This is the Braconid that was bred from a subterranean nest of *Vespa vulgaris*, L., at Chiddingfold in Surrey, referred to in *Ichneumon. Brit.*, 1911, 4: 135, where I pointed out that it is a member of “the Alysiiides, almost certainly attacking Dipterous larvae”. The latter are doubtless those described, but unfortunately never named, in *Ent. Record*, 1898, 10: 307. This wasps’ nest specimen is that regarded as a “Braconid too bad for determination”, of which several further examples were later bred from the same nest in the British Museum (*Ent. Mo. Mag.*, 1900, pp. 123 and. *nota*, 124); ever since it has lain *perdu* in my collection, till it fell within the scope of the present paper.

## LIST OF THE ENUMERATED HOSTS, INQUILINES, ETC.

Diptera, 30, 36, 41, 69.

*Mycetophilidae*, 17, 62*Symplecta similis*, Mg, 27*Sarcophaga* sp., 30*Cyrtoneura stabulans*, Flin., 8*Calliphora erythrocephala*, L., 8*Lucilia caesar*, Linn., 8*Lucilia* sp., 8.*Hydrotaea dentipes*, Fab., 8.*Pegomyia* sp., 56.*Anthomyia radicum*, Linn., 37.*A. spreta*, auct., 30*A. platyura*, Mg., 16.*Homalomyia canicularis*, L., 66.*Scatophaga litorea*, Flin., 27.*Scatophaga* spp., 40.*Acidia heraclei*, Linn., 51*Urophora centaureae*, auct., 17.*Lonchaea vaginalis*, Flin., 37.*Pelethophila flava*, Linn., 66.*Piophilus casei*, Linn., 37.*Ephydra riparia*, Flin., 27.*Drosophila fenestrarum*, Flin.,

67.

*Platycephala planifrons*, L., 27.*P. umbraculata*, Fab., 27.*Agromyza macquarti*, Dsv., 16.*A. cicerinae*, Rond., 23.*Phora rufipes*, Mg., 57, 66*P. grata*, Wood., 66.

Hymenoptera:

*Figites scutellaris*, Ros., 30*Platygaster aegeus*, Walk., 67.*Formica fusca*, Latr., 69.*Vespa vulgaris*, Linn., 69.

Coleoptera:

*Creophilus marillosus*, Linn., 8.*Bledius arenarius*, Payk., 27.*Choleva* sp., 66.*Necrophorus* spp., 41*Boris chlorizans*, Germ., 25.*B. cuprirostris*, Fab., 25.*B. laticollis*, Marsham, 25.

Crustacea:

*Talitrus locusta*, Linn., 27.

Carrion:

Cod, 8.

Sparrow, 8.

Starling, 8.	Fungi, 20, 22, 41, 58, 62, 67.
Rook, 8.	<i>Agaricus</i> sp., 42, 46.
Hedgehog, 8.	<i>Sphaeria typhina</i> , Pers., 30.
Mole, 8.	Sea-plants :
Rat, 8.	<i>Fucus</i> sp., 27.
Rabbit, 8.	<i>Sueda maritima</i> , Dum., 27, 31.
Horse, 8.	<i>Psamma arenaria</i> , RS., 15.
Excreta, 30, 40.	<i>Obione portulacoides</i> , Linn., 31.
Sap, 34.	

I will append a description of the largest and most handsome species of *Flexiliventer* ever seen by me and quite new to science. For a score of years I have refrained from bringing the insect forward, expecting that some day the male would turn up : but, as I have at least annually worked the same and similar ground in the interim fruitlessly, further delay appears useless.

### ***Dyscritus suffolciensis*, sp. nov.**

A smooth, nitidulous and very slender species, testaceous with a few sparse nigrescent markings ; antennae very short and abdomen strongly elongate. Head subcubical and postocularly produced, with cheeks subdilated ; eyes, ocellar region circularly and apices of mandibles, but not the occiput, black. Antennae stout, no longer than head and thorax, nineteen-jointed, with the two basal joints bright testaceous, large and much broader than the following ones, which are cylindrical, all deep black and well discreted. Thorax short and no broader than head, with apex of prothorax, a lateral vitta on mesonotum, base and more or less of metanotum nigrescent or infusate ; metathorax short and not denticulate, its disc very short, nitidulous and evenly convex ; petiolar area subvertical, smooth and entirely circumcarinate, enclosing short, twin carinae at apex. Scutellum normal, subconvex, testaceous and laterally transaciculate. Abdomen strongly elongate, sublinear, petiolate and distinctly a little compressed, clear testaceous with the terebral valvulae, petiole, and sometimes the transaciculate and parallel-sided postpetiole, black ; suturiform articulations flexible, allowing the segments' curvation below thorax (*Flexiliventer*, Hal.) ; basal segment gently curved, its centre neither elevated nor rugulose ; spicula longer than half abdomen, flavidous, strongly acuminate and below basally explanate, its valvulae nearly as long, dead black and apically subtruncate. Legs slender and not elongate, pale testaceous with onyches alone nigrescent. Wings very distinctly flavidous, with nervures bunneous and darkest at apex of basal cell ; tegulae pale testaceous ; stigma pure flavous, large, curved below, and there extending to near first intercubital nervure ; both basal cells entire ; praediscoidal not discreted from first cubital nervure by cubitus, which extends to alar apex, but is basally fenestrate low on the recurrent ; anal nervure extending to alar apex, basally continuous

with apical curve of praebrachial nervure. Hind wings bearing but two (Aphidiides) longitudinal nervures. Length,  $4\frac{1}{2}$  mm. ♂ unknown.

Obviously very like the sole known species of this genus, *D. planiceps*, Marsh. (*Spp. Hym. d'Europ.*, 1891, 2: 618; *Tr. Ent. Soc.*, 1899, p. 72, ♀ only), of which but a single female of  $2\frac{1}{2}$  mm. is known; taken near Plymouth by Bignell. They are best distinguished by the new species' much larger size, shorter head, more sparsely jointed flagellum, incomplete metathoracic areae, transaciculate postpetiole and strongly exerted terebra, which appears to rise from base of anal segment, and to be retained at rest upon the abdominal dorsum, where it reaches back to the mid-second segment (a unique position, open to confirmation in life), leaving the large valvulae of anal segment free. It is quite the largest kind of any flexiliventre that I know; *Aphidius pini* and *laricis*, Hal., rarely attain  $4\frac{1}{2}$  mm.—at all events in Britain.

Two females, of varying nigrescent density, were swept by me on May 18th, 1911, from (1) a fenland ditch near Lakenheath railway station, and (2) aquatic plants beside the Ouse river at Brandon staunch, about four miles apart. Both are swampy places on the eastern confines of the old Fen Sea, in Suffolk. Doubtless the new species is parasitic upon one of our largest *Aphididae*, subsisting upon some low bog-plant.

**NISONIADES TAGES.**—A second brood of this butterfly has appeared here, the earliest noted being on August 5th.—E. C. JOY, F.R.E.S.; 11, The Leas, Folkstone.

**DEILEPHILA GALII IN BERKSHIRE.**—Some 30 larvae of *D. galii* have recently been taken in this neighbourhood, feeding on *Epilobium angustifolium*, L. It would be interesting, in view of this inland occurrence, to hear whether this species has turned up in other parts of the country, and thus constitute 1933 as a *galii* year.—E. M. EUSTACE; Wellington College, Berks.

**COLIAS CROCEUS AND C. HYALE.**—The few records that have reached me so far show that *C. croceus* was abundant at the Lizard, in Cornwall, on August 11th (C. G. Granville Clutterbuck); was also seen at Barrington, Somerset, on July 26th by Dr. A. L. Salisbury; and was present in the Worthing district, Sussex, together with a few *C. hyale* about the middle of August (N. C. E. Pilleau).—N. D. RILEY.

**APATURA IRIS IN THE READING DISTRICT.**—While collecting in the Reading district last Sunday, I took a fine female *A. iris*, also a larva in its final instar of *Acronycta alni* feeding on crab apple.—B. HAROLD SMITH; Casa, Frensham Vale, Lower Bourne, Farnham, July 25th, 1933.

BEES OF THE GENUS *COLLETES* FROM SOUTH AFRICA.

BY T. D. A. COCKERELL.

IT is of interest to find that *Colletes*, so characteristic of the temperate regions of the northern hemisphere, is represented in South Africa by numerous species, which are closely allied to those of Europe and North Africa.

*Colletes bevisi* Cockerell.

S. Rhodesia : Matopo Hills, April 17th-30th, 4 ♂ (*J. O.*, *L. O.*). The hind tibiae and tarsi do not show the rufescent or brownish suffusion present in the type, but otherwise there is no appreciable difference.

*Colletes marleyi* Cockerell.

Natal : Drakensberg National Park, March 3rd-15th, 2 ♂ (*J. O.*). This is very like *C. bevisi*, but readily distinguished by the larger malar space. I mounted the male genitalia of both species, from the new material, and find that they are very similar, but readily distinguishable. The stipites of *C. bevisi* are much stouter, but the sagittal expansion or wing of *C. marleyi* is extremely broad, recalling that of *C. chobauti* Pérez. There is one male *C. marleyi*, with very red hair on thorax, from the Matopo Hills (*L. O.*).

Accompanying these males are three females from the Matopo Hills (*J. O.*), and two from the Drakensberg Park (*J. O.*, *L. O.*), all of which appear to belong to the same species as a specimen from Kampala, Uganda, labelled "*C. opacicollis* Friese, variety." In the British Museum I found supposed *C. opacicollis* as follows :

(a) Females : Scutellum with bright fox-red hair ; wings somewhat flavescent, nervures ferruginous ; abdominal hair-bands pale fulvous. Entebbe and Kampala, Uganda, many specimens collected by C. C. Gowdey.

(b) Males : Thorax above with red hair ; wings strongly reddish. Many collected by Gowdey at Entebbe.

Supposed *C. opacicollis* also comes from Salisbury, S. Rhodesia, as follows :

(a) Female : Very like the Entebbe material, differing by the smaller, dark-margined stigma, and first tergite with much broader red hind margin. But the Kampala material does not appreciably differ in the stigma from Salisbury *opacicollis*. (Specimen in British Museum.)

(b) Male : Wings suffused with reddish, nervures dark, face with long dull white hair. (Specimen in American Museum of Natural History, received from Friese.)

I possess a male, determined by Friese as *C. opacicollis*, from

Aoornhoek, E. Transvaal. It is nearer to *C. marleyi* than to *C. bevisi*, but quite distinct.

The original types of *C. opacicollis* came from Cradock, C.P., The main description is based on the female, which must be taken as the type, and which is said to have the malar space very short, almost linear. I conclude that the so-called *C. opacicollis* in collections is a mixed lot, and probably the true species is confined to the Cape Province.

A male *C. marleyi*, confirmed by the genitalia, was taken at Ficksburg, O.F.S., February 26–March 1st (*A. M.*).

### *Colletes sordescens* sp. n.

Male (type): Length about 11·5 mm., anterior wing 8·6. Black, including the long antennae; malar space almost as long as broad; mandibles with the apical half obscurely reddish; clypeus moderately shining between the punctures, labrum polished; hair of head and thorax above long, very pale fulvous, strongly mixed with dark brown; on lower part of face, cheeks and pleura the hair is dull whitish; mesothorax and scutellum dull, the scutellum with a shining spot in middle, the mesothorax shining between punctures posteriorly at sides; base of metathorax with strong plicae above the transverse keel; tegulae rufous; wings brownish hyaline, stigma small, dusky reddish, nervures fuscous; basal nervure falling a little short of nervulus, second cubital cell very broad, receiving recurrent nervure in middle; legs with dull whitish hair, orange on inner side of tarsi; spurs dark red; tarsi dusky red; abdomen moderately shining, tergites 1 to 5 with rather narrow dull white hair-bands; on third and following tergites there is long black hair before the bands: first two tergites very distinctly and quite closely punctured; venter with broad creasing white hair-bands.

Female. Malar space very short, but not linear; clypeus coarsely rugoso-punctate; hair of thorax above brighter, rufo-fulvous, but still mixed with brown; tarsi black; punctures on second tergite very small and dense; bands on tergites about twice as broad; venter without white bands. The abdomen is conspicuously shining.

Natal: Drakensberg National Park, March 3rd–15th (*J. Oglvie*). There is some resemblance to *C. rufitarsis* Friese, but that (I possess only the male) is smaller, without fuscous hair on thorax above. More similar is *C. mackieae* Ckll., but in the female the abdomen is quite different, and the male *C. mackieae* has pure white hair on face and cheeks. *C. fusconotus* Ckll. is smaller, with much broader abdominal bands.

### *Colletes mitescens* sp. n.

Male (type): Length about 9·5 mm., anterior wing 8. Black, including mandibles, antennae and legs; hair of head and thorax long and abundant, dull pale fulvescent, ferruginous (with no dark

hairs) on thorax above and tubercles; malar space about twice as broad as long; face broad; eyes dark brown; mesothorax dull, shining at sides posteriorly; scutellum shining in front; base of metathorax with widely-spaced plicae, bounded by a well-defined transverse ridge; tegulae small, ferruginous; wings dusky hyaline; stigma pointed, rufous, with a strong dark margin (style of *C. cinctellus* Friese); nervures very dark; basal nervure falling short of nervulus; second cubital cell very broad, receiving recurrent nervure slightly beyond middle; legs with pale hair like that of lower part of thorax, not brightly coloured on inner side of tarsi; abdomen moderately glistening, but very closely punctured, the tergites with broad pale fulvescent hair-bands, and some black hair before the bands; sternites with similar bands, but only about half as broad; third sternite deeply emarginate.

Female: Larger and more robust, length 10 mm.; face very broad (suggesting *C. volkmanni* Friese, which differs by the fulvous hind legs); malar space more than twice as broad as long, but very distinct; abdomen broad, first tergite shining, glaucous, excessively minutely punctured; margin of second tergite pale yellowish under the band.

Natal: Drakensberg National Park, March 3rd-15th (*Alice Mackie*). The male is so like *C. marleyi* that I at first took it for the same species, but it is readily distinguished by the short hair fringing the sternites. The dusky wings, structure of the metathorax, and mandibles not red at end distinguish it from *C. durbanensis* Ckll. In Friese's table it runs next to *C. opaciventris* Friese, from which it differs by the dusky wings, dark nervures and black tarsi. The stigma is quite different from that of *C. abessinicus* Friese. The female seems to belong here, but is in poor condition. It is distinct from anything described.

#### ***Colletes malleatus* sp. n.**

Male: Length about 9.5 mm., anterior wing about 7. Black, including mandibles, antenna and legs, except that the anterior and middle tarsi are obscurely rufescent, and the hind ones are conspicuously dark red; hair of head and thorax very long and abundant whitish on under parts and face, but nowhere clear white, on face distinctly tinged with fulvous; on head and thorax above pale dull fulvous, with no bright colour, and no dark hairs; malar space about twice as broad as long; vertex entirely dull; mesothorax and scutellum dull; tegulae dusky reddish; wings brownish hyaline, with very strong dark nervures, the small stigma ferruginous, without a dark margin; basal nervure falling a little short of nervulus; second cubital cell very broad, not parallel-sided, receiving recurrent nervure about middle; legs with pale hair like that of lower part of thorax; spurs ferruginous; base of metathorax with rather close plicae; abdomen dull, excessively densely punctured, the punctures of first tergite shallow, as if caused by the blows of a hammer, on a rough

surface (in *C. opaciventris* they are round and deep, on a somewhat shining surface); first tergite with long hair; tergites 2 to 5 with rather broad hair-bands on the reddish depressed apical portions and black hair before the bands; ventricle bands with rather long thin hair, weak in middle. The stipites are very short and thick, the small apex, like the end of a finger, bearing long fuscous hairs (much the style of *C. frigidus* Pérez); volsellae very large and broad, notched at end, but not appearing divided; sagittae thick and obtuse, with very broad dark brown wings, which do not extend as far as the rod-like portion.

S. Rhodesia: Vumba, Umtali, May 23rd-26th (*A. Mackie*). In Friese's table this runs exactly to *C. opaciventris* Friese, but is distinguished by the sculpture of the first tergite, and the character of the wings. The following table compares it with a series of related males, all received from Dr. Friese, who described them.

Hair of face and mesothorax white; stigma light orange-fulvous, without dark margin; hind tarsi dusky red

*opacigenalis* Friese.

Hair of mesothorax yellowish or fulvous; tarsi bright or dusky red

- |  |    |
|--|----|
| 1. Without black hair before the abdominal bands         | 1. |
| With conspicuous black hair before the abdominal bands   | 2. |
| 2. Hair-bands of sternites broadly interrupted in middle | 3. |

*opacicollis* Friese.

Hair-bands of sternites not interrupted in middle

*rufitarsis* Friese.

- |  |                             |
|--|-----------------------------|
| 3. Wings stained with reddish, vernures strong and dark; hair-bands of sternites thin  | <i>malleatus</i> Skll.      |
| Wings clear, nervures more delicate and paler; hair-bands of sternites dense and broad | <i>opaciventris</i> Friese. |

Another similar species is *C. cinctellus* Friese, of which I have only the female. It has paler, much more delicate veins, and the third discoidal cell much more produced at lower apical corner, than in *C. malleatus*.

Friese cites *C. opaciventris* from "Dunbody". My specimen, one of the original lot, is labelled "Dunbrody, March 16th, 1912." This is about 35 miles due north of Port Elizabeth.

Chapin, in his recent admirable work on the Birds of the Belgian Congo (*Bull. Amer. Mus. Nat. History*, 1932, 65: 376), has given a map showing the supposed mountain forest areas in Africa during the humid period of the Pleistocene. Dr. J. Bequaert (*in litt.*, February, 1933) suggests that perhaps they were even more extensive and continuous than Chapin shows, the effects of degradation not having been sufficiently taken into account. In any event, there was in the Pleistocene an opportunity for temperate-region types



to extend southward from Abyssinia to Natal, and it would appear that this condition existed within the lifetime of at least some living species, as several species of bees are known to occur in the highlands near the equator, and at low levels in South Africa. On the other hand, the opportunities for the remarkable South African desert fauna to spread northward were not so good, and the general outcome is that we have in South Africa an assemblage of highly peculiar genera, along with perfectly commonplace (from our point of view) species of European genera.

### NOTES AND OBSERVATIONS.

PYRAMEIS CARDUI ANNUALLY RESORTING TO THE SAME SPOT.—From the year 1918 to 1923 inclusive, careful observation was kept during these six years regarding the vernal appearance of *P. cardui* and *P. atalanta* over a very limited area of ground about 30 yards long and about 20 yards wide, in my garden at Thundersley, Essex, at an elevation of about 220 ft. above sea-level. The area chosen by the butterflies comprised a certain portion of the gravel drive, extending from the house towards the main gate some 60 yards distant. The drive was bordered on the east by a broad strip of grass and a row of rose bushes in bloom (giving off a powerfully sweet scent, which might have been the chief attraction), and on the west a rough grass lawn running to the ridge of a hill which gradually sloped down westwards adjoining a rough sloping meadow, overlooking a valley of slightly undulating country to the range of hills some 15 miles distant. The garden was bounded on the east by a high rough hedge and a row of tall elms, and a very rough narrow lane, between the hedge and garden, and open meadow land to the westward.

Each year, from about May 14th to the first week of June, *cardui* suddenly made its appearance, and always selected the identical spot on arrival each year, always appearing first time in the morning and sitting on almost the identical square foot of ground on the gravel drive yearly, and there remaining in the chosen place either flying about or sitting within the limited area of about 30 yards. It remained playing about throughout the day over a period of about 10 or 15 days and then disappeared; occasionally two individuals would occupy the same spot. Each year precisely the same conditions prevailed, one year being a repetition of the other, the actions and behaviour of each individual migrant, and the spot of ground chosen, being precisely similar year after year. The same closely applies to *P. atalanta*, which frequented almost the same portion of the garden annually, their favourite resting spots being the walls of the house and gravel-path immediately adjoining the house.—F. W. FROHAWK.

ALTITUDINAL DISTRIBUTION OF MUTILLIDAE.—Generally speaking, Mutillidae are confined to rather low levels, and one rarely meets with

them at any considerable altitude in the mountains. I therefore take occasion to note that I recently found *Dasymutilla vesta* Cresson at 6800 ft. alt., at Elbert, Colorado. It was kindly determined by Dr. C. E. Mickel, who has also recently determined for me *Mutilla* (*Ronisia*) *barbara* var. *decoratifrons* Costa, taken by Miss Alice Mackie, August 10th, at Arround, in the Atlas Mts., Morocco, at 1900 m. Not enough attention has been paid to the altitudinal or zonal distribution of insects, and it is difficult to extract precise information from the literature, as the altitude of a locality is commonly omitted. It would be a very useful function for the British Museum or some other central institution to start a card catalogue of localities where insects have been collected. Collectors returning from expeditions could then be invited to contribute cards on which would appear the names of localities visited, altitude, latitude and longitude, so far as possible, dates, and some particulars concerning climate and other matters of interest. References to literature, especially illustrations, could be added. Eventually it would be desirable to add lists of new species described from each locality. Naturally, such a catalogue would always remain very incomplete, yet every item would be of value, and probably many entomologists would be glad to co-operate.—T. D. A. COCKERELL; University of Colorado, June 11th.

**MIGRATION RECORDS.**—The following summary of 1933 observations under the S.E.U.S.S.'s scheme supplied by Capt. T. Dannreuther, R.N., Honorary Secretary of the Insect Migration Committee is a continuation of the notes recorded on pp. 187–190 *ante*. Observers on the Continent are asked to give timely warning of migrations likely to reach the British Isles when seen in progress.

(1) *Records of Insect Movement.*

(1) June 9th: *Plutella maculipennis* at East Dudgeon Light Vessel, 22 miles north of Blakeney Point, Norfolk, in a light S.W. wind; at noon after light airs with showery and thundery weather the previous night, "Myriads came on board, covering the ship. After an hour the moths were gone again except a few stragglers departing in small quantities. Being so small, it was impossible to see which way they actually went". Twenty specimens sent in were identified by the Rt. Rev. A. G. Whittingham, F.R.E.S., Bishop of Ipswich and St. Edmundbury (S. G. Sharman).

(2) May 21st–22nd: *Pieris brassicae*, *P. napi* and *P. rapae* Dr. F. C. Garrett, Northumberland, records (*Vasculum*, 19:3): "A flight of white butterflies began to pass Catleugh about midday May 21st; they were flying in a westerly direction. Large Whites were considerably in the majority, Green-veined were fairly well represented, but only odd Small Whites passed. The flight continued all next day. Mr. R. Craigs met them in ones and twos, and occasionally threes and fours, at intervals of 40, 50 and 60 yards. Their speed of flying was estimated at six or seven miles per hour. They appeared to be in pretty fresh condition" (F. C. G., *Northern Naturalists' Recorder*).

(3) July 19th : *Colias croceus*. Box Hill, Surrey, 3.30 p.m. in a stiff S.W. breeze, one fresh male flying south rapidly about six feet above surface. Early date if British bred (F. W. Frohawk). On same date at 4.30 p.m. at Ringmer, Sussex, one flying S.W. in a S.W. wind, sunny weather (G. V. Bull).

(4) July 20th-30th : *Pieris brassicae*, *P. rapae*, *P. napi*, *Vanessa urticae*, *Vanessa io*, *Epinephele janira* and *Chrysophanus phlaeas* (see also Section 3). An immigration in East Anglia appeared probable as early as July 20th, when these insects were seen trending mainly west or S.W. everywhere from the east coast inland for more than 20 miles continuously, crossing rivers, towns, woods and marshes where, in many cases, larval food to account for local emergence was absent. A *Pyrameis atalanta* and some *Vanessa urticae* were seen in Lothingland on July 20th. The three species of White averaged 100 per mile of the Beccles Road from Gorleston to St. Olave's on the morning of the 23rd. Direct evidence of immigration was not obtained until the 25th, when Large Whites, which were very abundant on the cliffs, and were remarked on by ordinary passers-by in the streets, were seen coming in at Gorleston; Small Whites, Small Tortoise-shells, Small Coppers, Meadow Browns and a Peacock were flying in from the beach that afternoon, and provoked further attention on the 26th when M. B. Ellis, stationed at the end of Gorleston Pier between 1.30 and 7 p.m., witnessed the arrival of the following insects across the sea against a slight westerly breeze: Large Whites (hundreds, flying strongly well above the sea, in small batches of half a dozen or less); Small Whites (rather fewer, flying low, dipping into the troughs of the waves); over thirty small Coppers (some resting on pier as they came in); about a dozen Small Tortoise-shells; nine Peacocks (flying strongly); a few Meadow Browns, and hundreds of Bumble Bees, *Bombus terrestris*. During the night a Peacock flew into a bedroom. On July 28th at Gorleston, when the winds were variable, but mainly westerly, thirty large Whites were seen to come in between 1.30 and 2.45 p.m. with one Peacock and one small Copper. On July 29th, thirty-nine Large Whites, one Small Copper and a dragonfly, *Sympetrum striolatum*, arrived on the end of the pier between 2.30 and 3.10 p.m. On July 30th there were thousands of Whites (three species, but mainly *P. brassicae*) on the fields; several acres of red clover near the cliffs were shimmering with them; thirteen Large and three other Whites came in from sea in a batch at 10.40 a.m., and Vanessaid butterflies were conspicuous at flowers in the cliff gardens. Apart from the fact that a number of Peacock butterflies were seen coming in from sea with other definite immigrants, we think it significant that there is a sudden comparative abundance of this species in Norfolk and Suffolk, where, in spite of a great amount of field work in suitable areas, we have seen no larvae of it here this year and very few last (E. A. Ellis and M. B. Ellis). With reference to the above, the Rev. A. P. Waller writes that on July 26th at Waldringfield, 7 miles inland on the Suffolk coast near Ipswich, "I noticed an unusual number of *P. brassicae*, *P. rapae*, *V. io* and *C. phlaeas*

in my garden, in fact quite an invasion, especially of the Whites". By August 3rd Whites were normal, but the others still numerous. The position is 35 miles south of Gorleston Pier (T. D.).

(5) August 2nd: 7.15 p.m. at the East Dudgeon Light Vessel, in a calm, "a swarm of *Pieris brassicae* and *Vanessa urticae* passed going S.S.E." Specimens sent in, the *P. brassicae* being a female (J. Audley).

(6) August 2nd: 5.30 a.m. at the Outer Dowsing Light Vessel, 30 miles east of the Norfolk coast, in misty weather with a light S.W. wind after a gale which veered from south to north, a male *Arctia caia* was captured.

(7) August 2nd: 5 to 6 p.m. at the Outer Dowsing Light Vessel 30 miles east of the Norfolk coast, when the weather was calm and sunny, after a gale veering from south to north the previous night, about twenty *Pieris brassicae*, of which three females and one male were sent in for examination, were seen flying very fast to the eastward. One had been seen on July 27th, but was not captured (J. W. R. Reeve).

(8) August 2nd: 11 p.m. (night), when the wind was west, force 3, fine and clear, a male *Pyraus cardui* in fine condition alighted on board the Outer Dowsing Light Vessel and was captured. Flight was fast and appeared to have been westerly, but it may have been attracted to the light. Some others seen, but only one caught (J. W. R. Reeve).

(9) August 3rd (?): 10.30 a.m. at the Outer Dowsing Light Vessel, in warm, misty weather, with a light S.W. wind, force 2, one *Vanessa urticae*, female, was taken. It was flying S.W. (J. W. R. Reeve).

(10) August 6th: At Scolt Head, Norfolk, a slight migration of *Pieris rapae* to the north and west, crossing The Wash, was witnessed. The next day there were none on the island, but about twenty *Pieris brassicae* were noted going the same way instead. *Plutella maculipennis* was swarming on the bushes of *Suaeda fruticosa* at both ends of the island, August 6th-7th. Every bush one touched scattered a dozen or so. I saw many covered by the rising tide, when the moths would flutter off, drift on the water, and dash up again (E. A. Ellis).

(11) August 9th: At Gorleston Pier, one *Vanessa io* and five *Pieris brassicae* arrived from the east against a fairly stiff westerly breeze at 11.30 a.m., time of writing (E. A. Ellis, Recorder).

### (2) First Appearances Reported.

*Acherontia atropos*: Craster, a very fine female, second week in June (*Vasculum*, 19:3).

*Nomophila noctuella* and *Plusia gamma*: R. Adkin, F.R.E.S., writes on August 8th at Eastbourne in hot weather in his light-trap "N. noctuella and *Plusia gamma* are only just beginning to show up to the extent of one or two of a morning".

### (3) Other Records of Insects at Sea.

At East Dudgeon Light Vessel, 22 miles north of Blakeney Point: "During the night of June 7th-8th (wind S.E., force 2, cloudy) a few moths came to the lantern, including a *Plusia gamma*. At sunrise (4.30 a.m.) on June 16th, about twenty small moths were

seen fluttering round the light just before it was extinguished; three captured proved to be two Silver-ground Carpet, *Melanippe montanata* L., and a *Crambus* (possibly *pratellus*); the weather was calm and dull (S. G. Sharman). July 20th, 9 a.m., in light S.W. wind, captured at rest, two *Porthesia similis* (Yellow-tail), both males. July 22nd, two male *Pieris rapae* captured in hot spell. During the last week of July, when the wind was mainly S.W. or calm and warm in daylight, a *Pyrameis atalanta* was seen and "the sea has been full of butterflies" reported, the specimens sent in during this period were *Porthesia similis* (female), *Melanippe montanata* and *Abraxas grossulariata* (J. Audley). August 2nd, 7.15 p.m. in a calm, a swarm of *Pieris brassicae* and *Vanessa urticae* passed going S.S.E.; a specimen of each captured (J. Audley). (See also under Section 1.)

At Royal Sovereign Light Vessel, 7 miles S.E. of Eastbourne on July 12th at 10 p.m. in a strong S.W. wind, force 6, three *Spilosoma lubricipeda* L. were seen and one specimen sent in and identified by R. Adkin (S. J. Rowe). And on July 27th at 7 a.m. when wind was E.N.E., force 2, a Yellow-tail, *Porthesia similis*, female, the only one seen, was captured (S. J. R.).

At Outer Dowsing Light Vessel, 30 miles east of E. Norfolk, on July 18th at various times, about a dozen small moths were seen flying S.S.E. in calm anticyclonic weather. A specimen sent in was identified by R. Adkin as the Latticed Heath, *Chiasmia clathrata*. Several more were seen during that week (J. W. R. Reeve). July 24th, 4.30 p.m., in fine, warm weather with light, variable winds, three Small Magpie Moths, *Eurrhynx urticae*, rested on board, and those not taken flew to east or S.S.E. Specimen was sent in and another seen next day. July 27th, 11.30 a.m., in fine, calm, hot weather, a single Yellow-tail, *Porthesia similis*, was found on board. August 2nd, 5.30 a.m., in misty weather, with a light S.W. wind after a gale which veered from south to north, a male Garden Tiger, *Arctia caia*, was taken and sent in (J. W. R. Reeve).

#### (4) Notes.

Continuous fine, warm, anticyclonic conditions during this period appear to induce insects to wander far afield little influenced by the wind. During the last three weeks Prof. A. C. Hardy, of Hull University College, has been experimenting with an adaptation of his deep-sea plankton recorder specially adapted to trap insects in muslin sleeves suspended for an hour at a time, day or night, by box kites at various heights up to 2000 ft. above Abbots Cliff (450 ft.) on the Folkestone-Dover coast road. The traps are self-opening and closing when in position, and the catches so far obtained average seven specimens per hour, usually small Diptera or Coleoptera, but no Lepidoptera up to date. Specimens are being examined by experts. Those taken in this position at considerable heights would probably be involuntary immigrants from France, distant 24 miles, with strong southerly winds, and this system may give some interesting results later.

## SOCIETIES.

ROYAL ENTOMOLOGICAL SOCIETY OF LONDON.—*Wednesday, June 7th, 1933.*—Prof. E. B. Poulton, F.R.S., President, in the Chair. —*Election of Fellows.*—The following were elected Fellows of the Society: J. K. Chorley, The Department of Agriculture, Salisbury, S. Rhodesia; A. Cuthbertson, The Department of Agriculture, Salisbury, S. Rhodesia; K. Mellanby, The London School of Hygiene and Tropical Medicine, Keppel Street, W.C. 1; D. Raichoudhury, The Department of Entomology, The Imperial College of Science and Technology, South Kensington, S.W. 7; M. T. El Sayed, The Department of Entomology, The Imperial College of Science and Technology, South Kensington, S.W. 7. Resolutions were proposed from the Chair, and passed with acclamation, thanking the various bodies who had extended hospitality to the Society during its Centenary Celebrations, and also to the Fellows and Officers of the Society, particularly the Hon. Secretary, Dr. S. A. Neave, for their services in connection with them. *Exhibits.*—Prof. E. B. Poulton, F.R.S., exhibited and made remarks on (1) notes on butterfly migration by Canon St. Aubyn Rogers and Mr. R. A. Lever; (2) further notes by Miss Oehlenschlaeger on the insect food of the Purple Martin, as recorded in the *Proceedings* of December 7th, 1932; (3) a further note by Mr. P. Lechmere Guppy on the Trinidad Wasp which built its nest on an electric light bulb; and (4) the *Diary of the Society of the Entomologists of London, 1780–1782*, and other interesting notebooks formerly in the possession of William Jones of Chelsea, and presented to Oxford University by Dr. F. D. Drewitt. The Hon. Secretary, Dr. S. A. Neave, exhibited a pair of Insect Catchers formerly used by William Jones of Chelsea, and presented to the Society by Dr. F. D. Drewitt. Mr. O. W. Richards exhibited a rare Syrphid fly, and made remarks on a stridulating weevil. Prof. G. D. Hale Carpenter exhibited and made remarks on the resemblance between *Aletis helcita* and *A. erici*. Dr. F. A. Dixey, F.R.S., made remarks on the sex scales on *Kricogonia lyside*, Godt. Dr. H. Eltringham, F.R.S., exhibited a Tipulid fly which made a sham attempt at stinging when handled. Dr. V. B. Wigglesworth made remarks, illustrated with lantern-slides, on the function of the so-called anal gills of mosquito larvae. Mr. C. F. M. Swynnerton spoke on recent progress in anti-tsetse work, illustrating his remarks with lantern-slides. Mr. Hugh Main exhibited some living insects from the Riviera. A selection of the addresses presented at the Society's Centenary were on view in the Library.—*Papers.*—The following papers were read: (1) Hymenopterous Parasites of British Lepidoptera, by C. Morley and W. Rait-Smith; (2) On an Advance of the Tsetse Fly in Central Tanganyika, by C. H. N. Jackson.—S. A. NEAVE, *Hon. Sec.*

THE SOUTH LONDON ENTOMOLOGICAL SOCIETY.—*May 11th, 1933.* Mr. C. G. M. de Worms, F.R.E.S., F.Z.S., etc., President, in the Chair. —The President gave a short account of the Centenary Meeting of

the Entomological Society of London, which he and Mr. Eagles attended as delegates to present a Congratulatory Address from the Society. Mr. Downs exhibited an almost completely black larva of *Abraxas grossulariata*; Mr. Bunnett, larvae of the Coleoptera *Rhagium mordax*, *Melanotus rufipes* and *Ocypus olens* to illustrate Mr. Blair's paper; Mr. Hawkins, larvae of *Leucania straminea* from dead stems of reed, and of *Gnophos obscurata* from Heather, Oxshott; Mr. Niblett, "big bud" galls on currant made by a mite, *Eriophyes ribes*; Mr. S. Wakely, an elder stem showing workings of the Clear-wing moth, *Synanthedon sphecoformis*; Mr. MacNulty, a series of bred *Lycia hirtaria* from Wimbledon ova; they were a paler form than those from Central London. Dr. Bull reported *Brenthis euphrosyne* on April 30th in W. Kent. Mr. Blair read a paper on coleopterous larvae, and exhibited preserved specimens of the different groups dealt with.

*May 25th.*—The President in the Chair.—The President exhibited young green larvae of *Dimorpha versicolor* from Scotch ova, and reported that butterflies as a whole were remarkably forward, and that larvae of *Strymon w-album* had already pupated. Mr. Dennis exhibited photographs of plant-galls to illustrate Mr. Niblett's paper, and Mr. Blair various Cecidomyid galls for the same purpose. Mr. Eagles exhibited the Coleoptera he had taken at the Oxshott field meeting in April, and Mr. Niblett numerous midges and the galls produced by them, illustrative of his paper on Gall-midges and their Galls.

*June 8th.*—The President in the Chair.—Mr. Demuth, of Holland Park, was elected a member. The President exhibited larvae of *Leucoma salicis* from S. London, and of *Spilosoma urticae* from the Norfolk Broads, and reported numerous early appearances. Dr. Bull exhibited larvae of *Cosymbia punctaria*; Mr. Sevastopulo, a long series of the dry season form *ismene* of *Melanitis leda* to show the extreme variation on the underside; Mr. Niblett, Trypetid and Cynipid gall-flies, upon which he read notes; Mr. Blair, ova of *Dicranura vinula* and some larvae of Coleoptera; Mr. Eagles, Coleoptera from the Chilworth Field Meeting, and various larvae, including *Orgyia gonostigma* from Brentwood, and called attention to the long period spent in the pupal stage by *Erastria fasciana*.

*June 22nd.*—The President in the Chair.—The President exhibited larvae of *Calocampa vetusta* from Aviemore; Mr. Niblett, a cocoon of *Saturnia pavonia*, from which 20 parasites had emerged between June 14th and 21st; Mr. Eagles, a photograph of the delegates to the Centenary Celebration of the Entomological Society of London; Mr. Jacobs, a specimen of the rare *Aphomia gularis* taken in Fen Court, E.C.; Mr. Sevastopulo, a number of dwarf examples of Lepidoptera in comparison with normal expanse of each species; Dr. Cockayne, a *Brenthis selene* caught by the adhesive tentacles of the sundew, *Drosera rotundifolia*; Mr. Andrews, the Anthomyiid fly, *Chiastochaeta trollii* from Yorks and the Anthomyiid fly, *Opomyza lineatopunctata*, from Lancashire; Mr. Turner, on behalf of Mr. Siviter Smith, photographs of a gate of which the timber used in its construction had been very extensively attacked by the larvae of

*Sirex*, sp., and a photograph of the *esmeralda* form of *Plusia moneta*; Mr. R. Adkin, specimens of *Nepticula decentella* new to Britain, taken in his garden at Eastbourne; Mr. C. Farrell, larvae of *Synanthedon myopiformis*; Mr. Wakely, various larvae, including *Catocala nupta* and *Euchloris smaragdaria* from ova; Mr. Hawkins, various larvae, including *Luperina cespitis*; Mr. Downes, dark larvae and green larvae of *Lycia hirtaria*; Mr. Eagles, Coleoptera, and lepidopterous larvae from the Field Meeting at Brentwood. Mr. Turner reported on the occurrence of immigrant species. Reports of Field Meetings were read, namely, Chilworth, by Mr. C. G. M. de Worms; Brentwood, by Mr. T. R. Eagles; and Oxshott, by Mr. C. N. Hawkins.—HY. J. TURNER (*Hon. Editor of Proceedings*).

ENTOMOLOGICAL CLUB.—A meeting of the Entomological Club was held at Eastbourne on Saturday, June 17th, 1933, Mr. Robert Adkin in the Chair. Members present in addition to the Chairman: Mr. Horace Donisthorpe, Mr. H. Willoughby-Ellis, Mr. Jas. E. Collin, Mr. W. J. Kaye. Visitors present: Mr. B. W. Adkin, Mr. R. A. Adkin, Mr. H. W. Andrews, Dr. R. Armstrong, Major E. E. Austen, Mr. G. T. Bethune-Baker, Mr. E. C. Bedwell, Dr. K. G. Blair, Mr. G. V. Bull, Dr. M. Burr, Dr. E. A. Cockayne, Mr. C. L. Collenette, Capt. Dannreuter, Mr. T. Bainbrige Fletcher, Mr. F. W. Frohawk, Mr. C. N. Hawkins, Col. F. A. Labouchere, Mr. H. Lankester, Mr. Hugh Main, Mr. A. L. Rayward, Capt. N. D. Riley, Mr. Edwin D. Sharp, Mr. W. Rait-Smith, Mr. W. H. T. Tams, Mr. J. R. le B. Tomlin, Mr. Henry J. Turner, Rev. Geo. Wheeler, Mr. C. G. M. de Worms. On Saturday the Chairman received the members and guests at the Grand Hotel at 12.45 for 1 o'clock lunch, which was served in a private room and to which 33 sat down. In the afternoon excursions were made to the Crumbles and to the Downs. The walks were interesting, but the wind much too high for collecting. The company again assembled in the lounge of the Grand Hotel at 5.45 for the Club Supper at 6 o'clock, which again was held in a private room. After supper the Chairman exhibited the original British specimen of *Nepticula decentella*, H.-S., together with another specimen recently captured. Both were taken in his garden at Eastbourne. He also had on view a photograph of the delegates to the Centenary Celebrations of the Royal Entomological Society of London recently held in London. Mr. Jas. E. Collin also showed some interesting Diptera. A most successful meeting concluded in time to catch the main line trains for London and elsewhere. Many of the guests were able to accept the Chairman's invitation to stay over the week-end, accommodation being provided for them at the Grand Hotel. On Sunday, June 18th, cars left the Grand Hotel immediately after breakfast for a collecting trip to Whitefield Wood in fine weather, and a very enjoyable morning was spent in this well-known entomological locality. After returning to the Grand Hotel, luncheon was served at 1.45, and during the afternoon a visit was paid to the Chairman's house, Hodeslea, Meads, where Mrs. Adkin dispensed tea. The Chairman's library, which



contains many rare entomological books, gave much pleasure ; and after inspecting the garden, which was looking its best, a business meeting of the Club was held. The Chairman gave a dinner-party in the evening at the Grand Hotel, at which the ladies were present. The company dispersed on Monday morning after having spent a most enjoyable week-end.—H. W.-E.

## OBITUARY.

E. J. GODFREY.

It is with real regret that we have to record the death of E. J. Godfrey, who, though probably unknown to lepidopterists whose interests lie in the British fauna, was yet a pioneer of no mean order in another field. He was born at Clock House, Linton, near Maidstone, Kent, in 1877, but having to leave school when quite young he yet succeeded in obtaining later an honours degree in science at London University. Almost immediately he obtained an appointment as science master at Suan Kularb College, Bangkok, Siam, which he took up in 1908. There, until his death on June 24th, 1933, he devoted all his spare time to a careful survey of the butterflies of Siam. During the earlier years of his service he made many successful expeditions to remote parts of Siam, suffering considerable hardship on more than one occasion, and contracting, we believe, the ailment from which he finally died. As a result of his collecting tours, and of much hard work in the more immediate neighbourhood of Bangkok, he eventually got together by far the most complete collection of Siamese butterflies ever made, and was thus enabled to publish in the *Journal of the Natural History Society of Siam* in 1916 a very valuable list of the butterflies of that country, in which he called especial attention to the many minor faunal regions that are represented within the political boundaries of Siam. He discovered quite a number of new species and subspecies, some of which were described in this magazine, and also provided the material for the only list of the Heterocera of Siam (*Journ. Nat. Hist. Soc. Siam*, 1924, 6: 229-289, pl.). His last contribution was a revised list of the butterflies (*Journ. Siam Soc. Nat. Hist. Supplement*, 1930, No. 4, 7: 203-397, with map), which is a model faunal list, besides indicating the great advance that has been made, largely as a result of his own industry, in our knowledge of the Siamese Rhopalocera since his first list appeared fourteen years earlier.

Godfrey was elected a Fellow of the Royal Entomological Society of London in 1914, and in 1913 took a prominent part in the formation of the Natural History Society of Siam, for some time editing its publications. He came home but twice, and on each occasion spent the greater part of his leave in the British Museum. Fortunately the interest he awakened in the entomology of Siam lives on in good hands.





*Ray Carpenter, photo*

BARRO COLORADO  
Laboratory and Clearing from Lake Gatun

*Vaus & Crampton, Ltd*





*Roy Carpenter, photo*



**BARRO COLORADO**

**Views from Laboratory looking across Lake Gatun**

*Vaus & Crampton, Ltd.*

# THE ENTOMOLOGIST.

VOL. LXVI.]

OCTOBER, 1933.

[No. 845

## BARRO COLORADO: A TROPICAL NATURE RESERVE.

BY W. G. SHELDON.

(Plates V and VI.)

IN the formation of the Panama Canal the Americans found it necessary, in order to obtain the depth of water needed, to dam the Chagres River, famous in the annals of the buccaneers, thereby forming the large artificial Gatun Lake, 164 square miles in extent. Situated within this area is a tract of land elevated above the lake several hundred feet, and now known as the Island of Barro Colorado. It is some three miles square, and is entirely covered with tropical forest; naturally when the adjacent lowlands became flooded, the animals inhabiting them flocked to this elevated district, which had become an ideal refuge. The Government of the United States, realizing Barro Colorado would make a perfect reserve for the fauna and flora of the Canal Belt, handed it over to the universities, museums, scientific societies and other institutions of America, stipulating that it should be treated as a nature reserve, and used for the encouragement of scientific discovery in the American tropics. A clearing was made on the north-eastern side of the island, several acres in extent, and upon it has been erected a commodious Laboratory, fitted up with all the requirements for tropical research. Several guest houses for the accommodation of visitors were built, and the whole was made mosquito-proof, and endowed with all the conveniences necessary for an enjoyable and interesting sojourn.

Some thirty miles of tracks have been cut through the forest, which otherwise would be quite impenetrable in many places. Huts, too, have been erected in places too remote from the laboratory for easy return, where visitors can spend the night when their particular line of research makes this desirable. Every encouragement is given to students to visit Barro Colorado. Very low fares are charged by the United Fruit Company and other American shipping companies to those who come *via* the United States. A free pass on the railway crossing the isthmus is given to all visitors, and other privileges and courtesies are conferred upon them, and whilst they stay on the island a very reasonable charge is made for what cannot be called anything but most comfortable quarters and an excellent cuisine.

Barro Colorado is thought to have been an observation point of Drake, and probably of others, when they were on the look-out for the treasure trains of mules journeying from Panama City on the Pacific coast to the various ports on the Caribbean, where the gold

and silver was shipped for Spain. The situation seems ideal for this purpose, for apart from the elevation, the gold road passed quite close, and traces of occupation have been found that would tend to confirm this theory.

The flora and fauna is extremely rich, over 2000 species of flowering plants are known, and the fauna comprises most of the mammals of the region, including jaguar, puma, ocelot, coati, several species of opossum, sloths, tapir, deer, ant-eaters, four species of monkeys, of one of which, the howler, there are several hundreds of individuals; one clan of these was installed within a hundred yards of the settlement, the old male making the forest re-echo at sunrise and sunset with his tremendous roars. There are also great numbers of two species of peccary, one of which, the white-lipped peccary, is not by any means a pleasant beast to encounter; however, they usually keep out of the way, and whether it is that they are used to visitors, an untoward incident has not arisen from them so far.

Many brilliant and interesting birds inhabit the island, including several species of toucan, parrots, trojans, and the game birds, tinamou and guan. Reptiles, including alligators, boa constrictors, the fer-de-lance, and other snakes occur.

Crossing the Caribbean from Jamaica, I reached Cristobal on December 24th last, and spent the night at the magnificent but very expensive Washington Hotel—at the date of my visit the dollar, being worth about six shillings of our money, added fifty per cent. to the cost so far as I was concerned. The next morning I crossed the isthmus by the first train to Balboa on the Pacific coast. I should say here that this journey is a very interesting one; the flora of the jungle is both beautiful and remarkable. At Balboa station I was met by Mr. James Zetek, the extremely genial and capable scientist who is in charge of Barro Colorado. Mr. Zetek was kindness itself. He drove me in his car to many points of interest in the neighbourhood, found me accommodation at the Y.M.C.A.—where I passed a very comfortable night—and the next morning, December 26th, accompanied me by the first train to Frijoles, the station for Barro Colorado. From Frijoles a motor-boat was waiting to take us across the Gatun Lake to Barro Colorado, some two miles distant. Arrived there the luggage is conveyed by the small funicular to the Laboratory, which, as will be seen by reference to Plate V is situated at a considerable height (about 200 ft.) above the lake, whilst visitors reach it by flights of steps.

∴ Arrived at the Laboratory one gazes back with interest on the wonderful view of the lake, with the forest-clad hills and mountains of the Panama Republic beyond. As will be seen from Plate VI,

the canal channel is quite close, and ships of all descriptions are continually passing, making the view most interesting both during the day and at night.

In order to be permitted to stay on the island it is necessary to have credentials that one wishes to use it for purposes of study. Those credentials and references I obtained through the American Museum of Natural History, by the kindness of Mr. Riley. Of course one is not permitted to interfere in any way with the higher vertebrates, but there is no objection made to the collection of insects; in fact the authorities—at present at any rate—are desirous that collections of these should be made in order that the insect fauna may become better known.

Immediately behind the Laboratory the tropical forest commences, and covers the whole island.

I was unable to obtain much information respecting Barro Colorado before leaving England—I believe only one Englishman had previously stayed on the island—and thus did not realize what an interesting and charming spot it was for a sojourn, or I should certainly have allotted a much longer time to my visit, which only extended to six days.

It is a place no visitor should allot less than a fortnight to, and twice this length of time is not too long if one wants to get even a fair knowledge of the island and its flora and fauna.

At Barro Colorado one is safe from malaria because it is too far from settlements to have infected mosquitoes, and by allowing no infected person on the island the local mosquitoes are free from malarial parasites, and hence harmless. Dysentery is also unknown, as the drinking water is pure. In case of accident, too, a perfectly appointed hospital is available at Balboa.

As my time was so limited I devoted almost the whole of it to observing and collecting the Lepidoptera. Of these, 49 species of Rhopalocera were taken or observed: whilst of the Heterocera great quantities visited the electric lights of the Laboratory at night and kept me busy until late hours. These have not yet been identified.

The only visitors staying on the island at the date of my visit were Dr. Ray Carpenter, of Yale University, and Mrs. Carpenter. Dr. Carpenter was engaged on a special mission to observe the habits of the howler monkeys, which have never been kept in captivity. I am indebted to his kindness for the views of Barro Colorado illustrating this paper, and to him and Mrs. Carpenter for delightful companionship during my stay.

Mr. A. Hall has very kindly identified the Rhopalocera. I should say that the whole of the species met with were seen or taken on the settlement clearing and the adjacent forest. The site is extremely uneven and the slopes steep, and for these reasons



the capture of such strong winged insects as are many of the tropical butterflies was attended with considerable difficulty.

There is a list of the Rhopalocera of Barro Colorado Island by E. I. Huntington in the *Bulletin of the American Museum of Natural History*, vol. lxiii (1932), Article III. The number of species in this list is 267 out of the 339 species known to occur in the canal zone.

The following is a list of the butterflies I obtained :

*Mechanitis isthmia*, Bates.—Not common.

*Ceratinia dione*, Hew.—Only one example captured.

*Ithomia panamaensis*, Bates.—Common.

*Heliconius melicerta*, Bates.—This fine species was seen and taken only at the flowers of a low tree at the back of the Laboratory.

*H. petiverana*, Doubl.—Common.

*H. rosina*, Bois.—This species flew with the last ; the two very closely resemble each other, and there is obviously a mimetic association between them. This association is extremely interesting, because in Trinidad there are two closely allied species, *H. erato hydara*, Hew., and *H. melpomene euryades*, Riff., which apparently have the same association as the Panama species. The former is the representative in Trinidad of *petiverana*, and the latter the representative of *rosina*. The two Trinidad species are black, with only the relief of a brilliant red transverse band on the front wings, whilst the Panama species have in addition a prominent white transverse band in the hind wings. The most obvious specific characters are the shape of the red transverse band on the front wings and the red spotting at the base of the underside of the hind wings, and these characters are substantially the same in the two geographical races or species, whichever they are considered. Judging from the fact that *rosina* and *melpomene euryades* are rare, whereas the other two are common, it would seem the former are the mimics, and the others the models.

*H. sara*, Bates.—Fairly common on the edge of the clearing, but rarely descending within reach of the net.

*Eueides olympias*, Felder.—Not common.

*E. aliphera*, Godart.—Abundant.

*Colaenis pherusa*, L.—Locally common in the clearing.

*C. julia*, Fab.—Abundant.

*A. jatrophae*, L.—Common.

*Junonia genoveva lavinia* Cram.—Common.

*Peridromia feronia*, L.—Only one example seen and captured.

*Temenis laothoe*, Cram.—Not uncommon, but difficult to capture.

*Nica canthara*, Doubl.—Common.

*Catagramma pitheas*, Latreille.—This extremely beautiful species was not uncommon, but as I was not aware of its penchant for sugar, only one fine example was captured.

*Dynamine mylitta*, Cram.—Common.

*Adelpha iphiclea*, L.—Common.

*Pyrrhogyra hypenor*, G. & S.—Not uncommon.

*P. crameri*, Auriv.—Frequent, but extremely difficult to capture; very strong on the wing, occasionally descending within reach of the net, but a few seconds afterwards flying round the tops of the highest fruit trees.

*Morpho amathonte centralis*, Stgr.—Only one example taken. I could not distinguish this from the next species in flight, and therefore cannot speak as to their relative frequency.

*M. achilles*, L.—This species, or the preceding one, or both of them, were apparently not uncommon, some half dozen examples being seen most mornings. My only capture of *achilles* was a very worn one which was attracted by a ripe banana. The ground was too hilly and steep to make an attempt to net *Morphos* much of a success.

*M. sp. ?*.—A large brown and white species was not uncommon, but it flew only over tops of the fruit trees and never descended within reach of the net. *M. theseis* is the only brown and white *Morpho* that I can find has been recorded from Panama: probably it was this species.

*Taygetis andromeda*, Cram.—Probably not rare, but kept amongst the thick forest growth.

*Euptychia disaffecta*, Butler.—Abundant.

*E. lepida*, G. & S.—Not common.

*E. hesione*, Sulz.—Abundant.

*E. westwoodi*, Butler.—Abundant.

*E. hermes*, Fab.—Abundant.

*E. terrestris*, Butler.—Abundant.

*Emesis mandana*, Cram.—One specimen seen and taken.

*Metacharis sp. ?*.—One specimen.

*Nymphidium molpe*, Hb.—Not uncommon.

*Catopsilia sennae*, L.—Common, but difficult to catch.

*Terias albula*, Cram.—Frequent.

*Papilio sesostris tarquinius*, Bois.—Frequent.

*P. polydamas*, L.—Common.

*P. thoas*, L.—Frequent, but very wild.

*Anteros chrysus*, Cram.—Only one specimen taken.

*Charis caeneus*, L.—Frequent.

*C. velutina*, G. & S.—Common.

*Sebaldia busiris*, Cram.—Only one example.

*Ate logia*, Hew.—Frequent.

*Xenophanes trixus*, Cram.—Not common.

*Systasea erosa*, Hb.—Frequent.

*Hesperia syrichthus*, Fab.—Common.

## ADDITIONAL NOTES ON THE TYPES OF CERTAIN BUTTERFLY GENERA.

BY FRANCIS HEMMING, C.B.E.

THE notes on the types of certain butterfly genera are supplementary to those contained in my recent paper on the subject (1933, *Entomologist*, **66** : 196-200), to which reference should be made for a statement of the principles that I have followed in fixing types. As in the case of that paper, I shall be very grateful to anyone reading this paper who is aware of a valid type-fixation of any of the generic names here dealt with, if he will furnish particulars to me at 18, Glebe Place, Chelsea, London, S.W. 3.

In the present paper I also give a definition of a new generic name which is required for a species that, as I show, is at present without a valid generic name.

### DANAIDAE.

**Danaus** Kluk, 1802 *Zwierz. Hist. nat. pocz. gospod.* 4 : 84.

Type = *Danaus plexippus* Linn., Kluk.

### **Lycorella** gen. nov.

*Generic characters.*—I select as the generic characters of *Lycorella* the characters given by Doubleday for *Lycorea* (1847, *Gen. Diurn. Lep.* (1) : 105).

*Type.*—*Lycorella cleobaea* God. (= *Heliconia cleobaea* God., 1819, *Ency. Méth.* 9 (1) (Ins.) : 222).

This name is proposed because *cleobaea* is without a valid generic name. *Lycorea* Dbl. (*l. c.*), of which it is the type, and by which it is generally known, is not available, as that name is invalid, being pre-occupied by *Lycoria* Meigen (1800, *N. Class. Mouches* : 17).

### MORPHIDAE.

**Potamis** Hübner, [1806-c. 1819] *Exot. Schmett.* 1 pl. [68]-[81].

Type = *Potamis achilles* Linn., Hb.

This name first appeared in the *Tentamen*, where Hübner applied it to *iris* Linn. only. That species would therefore have been the type, if the International Commission on Zoological Nomenclature had not pronounced against the validity of the *Tentamen* (see Opinion 97). The next occasion on which the name was used was in the work quoted above. The selection from the species there given of *achilles* Linn. (pl. [78]) as the type disposes satisfactorily of *Potamis* by making it a synonym of *Morpho* Fab. (1807), of which *achilles* also is the type.

## NYMPHALIDAE.

**Eurema** Doubleday, 1844 List Lepid. Coll. B.M. 1 : 83.

Type = *Eurema lethe* Fab., Doubleday.

The name is invalid, as it is a homonym of *Eurema* Hb. [1823]. The selection of *lethe* Fab. as the type in any case makes the name a synonym of *Hypanartia* Hb., as *lethe* Fab. is congeneric with the type (*tecmesia* Hb.) of that genus.

**Heliconia** Godart, 1818 Ency. Méth. 9 (1) (Ins.) : 203.

Type = *Heliconia charitonia* Linn., God.

The name is thus a synonym of *Helconius* Kluk (see below).

**Helconius** Kluk, 1802 Zwierz. Hist. nat. pocz. gospod. 4 : 82.

Type = *Helconius charitonia* Linn., Kluk.

**Limonetes** Billberg, 1820 Enum. Ins. : 78.

Type = *Limonetes populi* Linn., Billb.

It is clear from the synonymy that he gives that Billberg intended this to be a new name. The selection of *populi* Linn. as the type makes it a synonym of *Limenitis* Fab.

**Nymphalis** Kluk, 1802 Zwierz. Hist. nat. pocz. gospod. 4 : 86.

Type = *Nymphalis polychloros* Linn., Kluk.

**Nymphalus** Boitard, 1828 Manuel Ent. 2 : 300.

Type = *Nymphalus populi* Linn., Boit.

The name is thus a synonym of *Limenitis* Fab.

**Timetes** Doubleday, 1844 List Lep. Ins. B.M. 1 : 87.

Type = *Timetes coresia* God., Dbl.

The name is thus a synonym of *Megalura* Blanch.

## RIODINIDAE.

**Lemonias** Illiger, 1818 in Wiedemann, Zool. Magazin 1 (2) : 99  
and

**Lemonias** Hubner, [1806-c. 1819] Exot. Schmett. 1 pl. [35]–[39].

Type = *Lemonias epulus* Cram., Illiger.

This name first appeared in the *Tentamen*, where Hübner applied it to one species only, *matura* Linn., which would have been the type, if the International Commission on Zoological Nomenclature had not pronounced against the validity of the *Tentamen* (Opinion 97). In 1818 Illiger published the name as his own, and gave the names of thirty species. Hübner used the name in the first volume of his *Exot. Schmett.*, in which he gave it to five species, but it is impossible to say whether he was aware of Illiger's action. In view of the dates, it is probable that he was not. The selection, as the type, of *epulus* Cram., which is given by both Illiger and Hübner, disposes of the name *Lemonias* very satisfactorily, as it provides a

valid generic name for *epulus*, which was previously without one, owing to its having been usually regarded as the type of *Hamearis* Hb. (1818), of which it was invalidly selected as the type by Scudder (1875, *Proc. Amer. Acad. Arts Sci.*, Boston 10 : 183).

#### LYCAENIDAE.

**Cosmolyce** Toxopeus, 1927 *Tijd. Ent.* 70 : 268.

Type = *Cosmolyce baetica* Linn., *Tox.* (= *Papilio boeticus* Linn., 1767, *Syst. Nat.* ed. 12. 1 (2) : 789 no. 226).

The generic name *Lampides* Hübner ([1823], *Verz. bekannt. Schmett.* (5) : 70) is usually applied to *boeticus*, but that usage is wrong, as the type of *Lampides* is *zethus* Hb. (= *celeno* Cram.). The latter species is congeneric with *bochus* Cram., the type of *Jamides* Hb. (*l. c.*, (5) : 71). The position is therefore that *Jamides* is a synonym of *Lampides* to which *bochus* and its allies should be referred, and that *boeticus* has no valid generic name. It is to fill this gap that Toxopeus proposed the name *Cosmolyce*. The highly specialized scale characters presented by *boeticus* are not found in any other species, and *boeticus* is therefore the only species of the genus *Lampidella*.

**Argus** Scopoli, 1763 *Ent. Carn.* : 176.

Type = *Argus coridon* Poda., Scop.

The name is invalid, as it is pre-occupied by *Argus* Bohadsch (1761). The correct generic name for *coridon* Poda is *Uranops* Hemming (1929, *Ann. Mag. Nat. Hist.* (10) 3 : 222), of which *coridon* is the type.

**Argus** Boisduval, 1832 *Ic. hist. lépidopt. Europe* 1 (5, 6) : 49.

Type = *Argus alcon* Fab., Boisd.

The name is invalid as it is pre-occupied by *Argus* Bohadsch (1761) and *Argus* Scop. (1763). The correct generic name for *alcon* is *Maculinea* Van Eecke (1915, *Zool. Meded.*, Leiden 1 : 28), of which *alcon* is the type.

**Plebejus** Kluk, 1802 *Zwierz. Hist. nat. pocz. gospod.* 4 : 89.

Type = *Plebejus argus* Linn., Kluk.

*Plebejus* Kluk takes the place of *Plebeius* Kirby (1871) of which *argus* Linn. also is the type. *Plebeius* Kirby is in any case invalid as it is a homonym of *Plebejus* Tschudi (1846).

**Zephyrius** Billberg, 1820 *Enum. Ins.* : 80.

Type = *Zephyrius betulae* Linn., Billb.

This name is no doubt a mis-spelling of *Zephyrus* Dalm. The selection of *betulae* as the type makes it a synonym of *Thecla* Fab. (1807), of which that species also is the type. *Zephyrus* Dalm. is also a synonym of *Thecla*.

## PAPILIONIDAE.

**Polydorus** Swainson, 1833 Zool. Illust. (2) 3 pl. 101.  
and

**Thoas** Swainson, 1833 Zool. Illust. (2) 3 pl. 121.

The types of these genera are automatically fixed by absolute tautonymy, as *polydorus* Linn. and *thoas* Swains. (= *aristolochiae* Fab. ssp. *adamus* Zink.) respectively, in accordance with the provisions of Article 30 1(d) of the International Code of Zoological Nomenclature. I regret that through inadvertence I recently wrongly selected as the types of these genera *romulus* Cram. and *paris* Linn. respectively (1933 *Entomologist* 66 : 199 and 200 respectively).

## HESPERIDAE.

**Thymale** Oken, 1815 Lehrbuch Naturgeschichte 3 (Zool.) (1) : 757, 758.

Type = *Erynnis* (*Thymale*) *tages* Linn., Oken.

DANAUS PLEXIPPUS IN CORNWALL.—A female of *Danaus plexippus* was taken here on September 2nd ; it is in good condition, but there are traces of general rubbing on all wings. It was flying very slowly, in a light breeze, and appeared to be in a weak state. The wing spread is 4 in. The weather for the past week here had been fine, with light westerly and northerly winds.—B. J. LEADER ; "Rosemerrin", Bude, N. Cornwall.

COLIAS CROCEUS NEAR MANCHESTER.—On September 15th my daughter—Mrs. Le Neve Foster—saw *C. croceus* in the park at Didsbury. Didsbury is within four miles of the centre of Manchester. This must be a very exceptional case, although I have heard of one or two other cases many years ago. It is also interesting to know that both *Plusia festucae* and *Plusia chrysolis* have been double brooded here this season.—A. E. TONGE ; Ashville, Trafford Road, Alderley Edge, Cheshire.

POLYGONIA C-ALBUM IN HAYLING ISLAND.—This butterfly has appeared here this summer. I recently caught four specimens in my garden, and have seen others.—A. W. DAWSON (Capt. R.N.) ; "Winzer", Stoke, Hayling Island, Hants, July 30th, 1933.

[This species has also been reported from Purbrook, five or six miles north of Portsmouth, by A. Banks, and from Surbiton and Thames Ditton by W. J. Kaye and E. R. Gunther respectively, all towards the end of July. On August 26th and the two succeeding days one was observed at Putney (G. Crawford) ; on September 17th a female was seen in the garden of a house at Parkside, Wimbledon Common (H. R. Yglesias) ; and Mr. Rosenberg writes that he saw one in his garden at Haverstock Hill, N.W. 3, the previous day.—ED.]

## A NEW SPECIES OF NEURAESCHNA (ODONATA).

BY D. E. KIMMINS.

AMONGST a collection of Odonata from Iquitos, Peru, purchased by the British Museum from Herr P. Nagel, of Hanover, is a series of an undescribed species of *Neuraeschna* closely allied to *N. harpya* Martin.\* It differs primarily in the relatively greater length of the inferior anal appendage of the male, but there are also differences in the shape of the superior appendages, there is a brown costal streak as in *N. costalis* Burm., and there are slight venational differences.

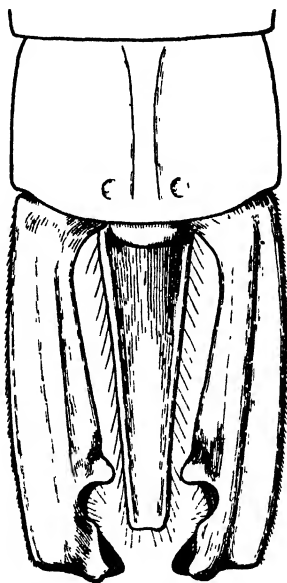


FIG. 1 —*Neuraeschna producta*, sp. n. ♂ anal appendages, dorsal view.

***Neuraeschna producta*, sp. n.**

♂. Labrum, anteclypeus, postclypeus and frons in front light greenish brown, shading to dark brown at the angle; frons above dark brown, shading to light brown at the vertex; no well-marked T-spot. Vertex and occiput shining black.

Thorax rich dark brown, with a blue stripe (shading to green at its upper end) on the dorsum on either side, not reaching the ante-alar carina. Anteriorly this stripe is narrowed to an acute apex, and there is a slight constriction near its upper end. Other thoracic markings green, as follows: The ante-alar sinus, except near the

\* Coll. Zool. Selys-Longchamps, Aeschnines, fasc. xx, p. 206, 1909.

carina; the postnotum of the mesothorax and the notum of the metathorax, and spots on and between the bases of the wings; two parallel-sided lateral stripes, each about one-third of the width of the dorsal stripe, situated respectively on the mesepimeron and the metepimeron. Postnotum of the metathorax blue. Anterior femur pale at the base on the posterior side, apex black, tibia reddish brown; tarsi black, median and posterior legs reddish brown, tarsi black.

Abdomen brown, too discoloured to enable any pattern to be made out with any certainty, but there appears to be a blue dorsal spot on the posterior margin of segment 1, and the auricles are blue above. Abdomen moderately constricted at the third segment and thence gradually dilating to the ninth

Superior appendage (Fig. 1) in dorsal view with its outer edge slightly convex from base to apex, which is truncate; the inner edge is concave near the base and thence nearly straight, being directed

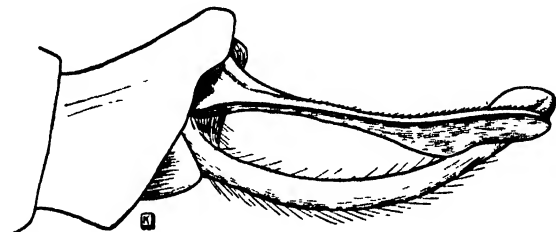


FIG. 2.—*Neuraeschna producta*, sp. n. ♂ anal appendages, lateral view.

slightly downwards and diverging somewhat from the outer edge for about three-quarters of its length; it then turns upward and runs in a concave sweep to the inner apical angle, which is considerably inflated dorsally. The upper margin of the inflated portion is sinuous, and in places overhangs the lower margin. The concave portion of this sinuous edge is shorter than in *N. harpya* Mart., and the apex of the appendage is more obliquely truncate. There is a rounded median keel running from the base of the appendage to the base of the inflated portion. Inferior appendage long, extending almost to the apex of the superior appendage, tapered from base to apex, which is truncate, its dorsal surface is deeply hollowed to form a trough. In profile view (Fig. 2) the outer edge of the superior appendage is curved gently upward from near the base to just before the apex, where it turns downward. The lower, inner margin bears a rounded dilatation at about three-quarters of its length. The apical inflation of the inner margin appears from the side as a rhomboidal mass with rounded angles. Anal plate very high, visible in profile as a small rounded process above the base of the superior appendage.

Wings hyaline, faintly tinged with brown, with a dark brown streak on the anterior edge of each wing from base to pterostigma. In the anterior wing this streak extends over the posterior half of



the costal, and the whole of the subcostal area, as far as the nodus, and beyond there over the costal area and the area behind the radius. In the posterior wing the brown streak extends over the areas from the costa to  $M_1$ . Pterostigma brown, margined with black veins. Costa brown, remaining veins black; membranule white, short, about 1 mm. by 2 mm.

♀. Resembling the male, but larger. The only specimen before me is much discoloured and its markings are not discernible. Wings comparatively broader and the brown streaks at anterior edges stronger and more definite. Anal appendages broken.

	♂.		♀.	
	Front wing	Hind wing	Front wing.	Hind wing.
Antenodals . . . . .	35-37	25	37-40	28-29
Postnodals . . . . .	24-25	26-28	25-26	30-33
Cross-veins in 2nd series basal to 1st thickened antenodal . . . . .	3-4	2-3	3	3-4
Sc produced beyond nodus cells . . . . .	3-4	3-4	3-4	3
Cells in triangle . . . . .	10-14	9-12	12	9
Cross-veins in supratrangular space . . . . .	11-12	9-11	11-12	10
Cross-veins in median space . . . . .	7-9	4-5	6	6
Length in mm. . . . .	58	58	65	65

Length (excluding appendages), ♂, 79 mm.; ♀, 87 mm.

Length of superior appendages of ♂, 5 mm.

♂ Type and 3 ♂♂, 1 ♀, paratypes, Peru, Iquitos, Mishuyacu, 28.viii-16.ix.30 (*Katzenbach*), in the British Museum; 3 ♂ paratypes from the same locality, 22.viii.30, 25.ix.30, 8.x.30, in the collection of Mr. W. D. Hincks, of Leeds.

*COLIAS CROCEUS* IN ARRAN.—At Kildonan, at the southern end of Arran, on September 12th, whilst walking down a lane towards the shore I saw a *Colias croceus* flying towards me. It passed me, returned, and then disappeared over the bank, giving me quite a thrill, as I had never before seen this species alive. On turning up the records, I find that in the *British Association Handbook* (Glasgow, 1901) it is stated to have occurred in Arran in 1847 and "again later".—A. M. STEWART; 8, Ferguslie, Paisley.

*ACHERONTIA ATROPOS* IN THE WEST OF SCOTLAND.—I heard of two larvae of this species being exhibited during August in a seed-shop window in Ayr; but in June I had a moth, caught in Paisley, brought to me, and Dr. W. A. Galbraith wrote me from Low Carluke in Lanarkshire, that he also got a fine specimen about the same time. These records point to a probable invasion of this big moth in greater numbers than usual.—A. M. STEWART; 8, Ferguslie, Paisley.

## BRITISH TRICHOPTERA IN MAY AND JUNE.

BY MARTIN E. MOSELY, F.R.E.S.

In the months of May and June Mr. D. E. Kimmins paid four visits to the counties of Surrey and Sussex, and devoted some attention to the Trichoptera, collecting sixteen species, which he has kindly presented to the British Museum.

Of particular interest is a single ♀ *Beraea articularis* Pict., taken at Thursley on May 28th. The locality of this capture is the out-fall of one of the old hammer-ponds that are found in Surrey and Sussex, at a spot where the water of the pond is discharged through a bricked shoot and falls into a rocky pool. Whilst this species is abundant on the continent, there are few records of its capture in this country.

The remaining species are all common, though of interest as indicating the distribution of the Trichoptera in England.

A *Micropterna lateralis* Steph. has been received from Springvale, Isle of Wight, collected by Mr. Eric Tavener and a *Molanna angustata* Curt., with a *Mystacides azurea* L., both from the Cam at Cambridge, were presented to the Museum by Canon L. W. Grensted.

Extensive collections made on the Thames by Mr. W. E. China at Molesey and Canon L. W. Grensted at Oxford will be recorded separately at the end of the season.

Collections were made from the following localities :

Surrey : R. Tillingbourne, Friday Street, Gomshall, 25.v.1933 ; Thursley district, 28.v.1933.

Sussex : R. Arun, Pulborough, 4.vi.1933 ; R. Ouse, Offham, 11.vi.1933.

Isle of Wight : Springvale, 5.vi.1933.

Cambridge : R. Cam, 3.vi.1933.

## PHRYGANEIDAE.

*Phryganea striata*, L.—Offham.

## LIMNOPHILIDAE.

*Limnophilus extricatus* McL.—Gomshall.

*Drusus annulatus* Steph.—Gomshall.

*Micropterna lateralis* Steph.—Isle of Wight.

## SERICOSTOMATIDAE.

*Silo pallipes* F.—Gomshall.

## BERAEIDAE.

*Beraea articularis* Pict.—Thursley.

## MOLANNIDAE

*Molanna angustata* Curt.—Cambridge.

## LEPTOCERIDAE.

*Leptocerus cinereus* Curt.—Pulborough.

*L. aterrimus* Steph.—Pulborough ; Thursley

*Mystacides azurea* L.—Friday Street ; Cambridge

*M. nigra* L.—Pulborough.

## HYDROPSYCHIDAE.

*Hydropsyche angustipennis* Curt.—Thursley ; Gomshall

## PSYCHOMYIDAE.

*Tinodes waeneri* L.—Friday Street.

*T. assimilis* McL.—Thursley.

## POLYCENTROPIDAE.

*Polycentropus flavomaculatus* Pict.—Tillingbourne.

## RHYACOPHILIDAE.

*Rhyacophila dorsalis* Curt.—Friday Street ; Thursley.

*Agapetus fuscipes* Curt.—Gomshall.

## NOTES AND OBSERVATIONS.

GRACILARIA PYRENAEELLA, CHRÉT., AN ADDITION TO THE BRITISH LIST.—On June 9th this year I collected in the Isle of Wight several *Gracilaria* "cones" on the leaves of maple, thinking to obtain a series of *G. semifascia*, Hw. Nine *Gracilarias* emerged—three each on July 2nd, 3rd and 4th—which Mr. Meyrick kindly identified for me as being *Gracilaria pyrenaella*. He informs me that Chrétien's specimens were bred from *Acer campestre* in the Basses-Pyrénées, and that the species, so far as he is aware, has not hitherto been found elsewhere.—LEONARD T. FORD ; St. Michael's, Bexley.

MIGRATION RECORDS.—The following additional records of 1933 observations under the S.E.U.S.S.'s scheme (*cf. Entom.*, **56** : 186-190, 209-212) have been collected and supplied by Capt. T. Dannreuther, R.N. :

(1) *Records of Insect Movement.*

(1) April 11th : *Pieris rapae*, Alston, Cumberland, two first seen flying N.N.W. Then not numerous for a month, but in swarms in August (G. Bolam).

(2) May 21st : *Pieris brassicae*, Alston, Cumberland, a score going northwards against a light north wind in small lots in fine,

warm weather at elevations up to 2000 ft. On many subsequent days varying numbers drifting to north or N.W. across moors at about this level. In the course of a day large numbers would pass, not in clouds, but from a handful up to hundreds flying across heather and grass. A month later they became numerous in gardens.

*Pieris napi*: Also May 21st at Alston from midday onwards, this species was observed flying north or N.W. in exceptionally fine weather. Very abundant for some days drifting over the moors up to 2000 ft., sometimes in hundreds, in small companies usually, but great in aggregate. Numerous up to end of July (G. Bolam).

(3) August 10th: *Macroglossa stellatarum*, Hastings. A female, released at noon in a light east wind, mounted high, flying fast to westward (T. D.).

(4) A. W. Godfrey, Senior Assistant Keeper, Start Point Lighthouse, Stokenham, Kingsbridge, S. Devon, writes (September 4th, 1933): "On August 18th, and until the 23rd, I observed for about two hours each day a steady stream of Clouded Yellow butterflies coming in across the sea from S.W. direction; they were in little groups of twos and threes and flying about 3 ft. above the water. On the 18th and 19th the intervals between the groups were about every seven minutes, and afterwards they were not so frequent. The weather at the time of these observations was wind, S. to S.W., light; temperature, average, 68° shade; cloud form from the 18th was St. Cu. (four parts), Cl., Cl. St., and Cu. Mb., St. Cu. respectively; barometer slowly falling from 29.94 to 29.68. The earliest time of the day that the Clouded Yellow came in from the sea was about 11 a.m. and the latest was 3.30 p.m. The estimated speed was about 5 or 6 miles per hour—much slower than the Large White or the Painted Lady. The course of the Clouded Yellow was from the S.S.W., and the wind was from the south, force 1 (light airs). Some of the Clouded Yellows appeared to be in a tired condition on reaching the cliffs."

[In this connection Engr.-Capt S. T. Stidston writes from Ashburton, S. Devon: "*C. croceus* became very abundant all over the south coast about August 25th. I saw twenty in the forenoon; they were flying in a quarry at Turnchapel in greater numbers than the Whites . . . they were fresh and recently emerged. *Pyrameis cardui* is very scarce with us."]

"The Humming Bird Hawk moth was the only type of moth fluttering around the light that night (August 29th). I noticed about a dozen altogether. I have also noticed during the second and third weeks in August small groups of Dragonflies, about six to seven in number, catching small flies on the edge of cliffs and then flying inland, but was unable to catch any; they were about 3 in. long" (A. W. Godfrey).

(5) As regards the flight by night of *Pyrameis atalanta* (*Entom.*, 56: 188), A. W. Godfrey writes: "I cannot remember exactly, but I believe it was about the end of May or the beginning of June that I noticed the Red Admiral flying at night, and, in fact, I caught one

at 3.15 a.m. fluttering around the lantern. The weather at the time was rather warm, with light S.W. winds."

(6) August 22nd: *Pyrameis atalanta* at Royal Sovereign Light Vessel, one seen flying strong to S.S.E. at 6 p.m., when the wind was W.S.W., force 6.

(7) August 30th: *Pieris rapae* at Royal Sovereign Light Vessel, 7 miles S.E. of Eastbourne at noon, one flying north against the N.N.E. wind. At 2 p.m. twenty *Pieris brassicae* settled on the lantern, but direction from which they came was not noticed. It was a misty forenoon. Temperature 76°.

(8) F. J. Morgan, serving in the Royal Sovereign Light Vessel, situated 6 miles S.E. of Eastbourne, reports the following: (a) *Libellula quadrimaculata*, one flying northwards, May 22nd, in a N.N.W. wind (force 2), in cloudy and misty weather, temperature 65° F.; (b) five *Pieris brassicae* and *P. rapae* flying northwards, May 24th, in a N.N.W. wind (force 3), in cloudy weather after rain and mist, temperature 61° F.

(9) Dr. F. C. Garrett writes from South View Ho., Alnmouth, Northumberland: "On July 31st the Large White appeared here in great numbers, there being seldom less than a dozen in my little garden, about 12 by 20 yards, and they were all about the neighbourhood. Nearly all were quite fresh, but I cannot believe they were 'locals' as so few cabbages are grown" (August 21st, 1933).

## (2) First Appearances Reported.

*Pyrameis cardui*: Summer brood not reported numerous anywhere, and were not seen at all during the period August 20th to 30th between Eastbourne and Dungeness. Three at Hastings August 31st (T. D.); several, but not common, in W. Sussex, end of August and early September, also Wimbledon September 19th (N. D. R.); Marlborough August 20th, Putney September 5th, and Cambridge September 8th, all solitary (G. Crawford).

*Pyrameis atalanta*: The same applies to this species, but numbers seen were more numerous than *P. cardui*. It first appeared at Alston at 9 a.m. June 5th, and on June 22nd half a dozen were seen there together in garden (G. Bolam).

*Colias hyale*: Hardwick, Berks. two males flying west in calm weather (L. R.).

*Colias croceus*: August 13th, Bamford, near Ipswich, a fine female seen flying north in a strong E.S.E. wind (E. A. Ellis); August 19th, twenty seen at Ashburton and up to two dozen daily, all fresh and probably local emergences (S. T. Stidston); August 26th, a male on Ullswater Lake (G. Bolam). [Cf. also other records, pp. 225, 228, 235-6.—ED.]

*Acherontia atropos*: Full-fed larva, Ashburton, August 3rd; two larvae, Bexhill, August 10th and 15th (H. J. Sargent); another, Selsey Bill, August 15th (N. D. Riley); large numbers at Chilham, Kent (*Observer*, September 10th); pupa, Chichester, September 2nd (Joseph Anderson).

*Herse convolvuli* : August 21st, male, at Hastings, three females on 24th and 30th and September 1st (W. R. Butterfield); August 23rd, male attracted to light at Bexhill (H. J. Sargent); six at Hastings August 21st to September 1st (W. R. B.); one at Chichester August 31st (Joseph Anderson); one at Reading August 31st, worn (R. E. G. S.).

*Celerio euphorbiae* : A moth emerged, from a larva found last autumn, at Easter at Sandhurst, Kent (G. V. Bull).

*Macroglossum stellatarum* : Tadworth, April 8th (T. S.); Kendal, one June 20th and two July 8th (Miss F. M. Thompson); at Knaresdale, Cumberland, three at end of July; at Gilchristland, Dumfriesshire, seventy larvae seen July 5th (Dr. O. H. Wild); at Oxford August 28th (J. J. Walker); common at Eastbourne August 31st (R. Adkin).

*Heliothis peltigera* : August 14th, larvae found on Romney Marsh (de Worms).

*Plusia gamma* : Not reported common anywhere since June.

#### *Abnormal Abundances Reported.*

No observers in Leicestershire having reported this year, a two hours' visit on the afternoon of September 10th was paid to Abbey Park, Leicester, during which time the following butterflies were counted : 4 *Pyrameis cardui* females, and 3 next day ; 20 *Pyrameis atalanta*, mostly females, and 6 the next day ; 112 *Vanessa urticae* and about 20 next day. It should be noted that the figures for the 11th were on a bed of single dahlias, Coltness Gem, about a mile from the much larger single dahlia beds of Abbey Park; not more than two dozen Large and Small Whites were seen and no other butterflies of any sort, although the weather was very warm, with a N.E. breeze (T. D.).

*Vanessa io*, after comparative scarcity in Berkshire, is reported abnormally abundant this year, in spite of a large percentage of larvae being found ichneumonated (R. E. G. S.).

#### *Abnormal Absences Reported.*

Although butterflies and moths have been more abundant than usual, it has been noted by several independent observers that between the dates August 19th to 26th there was a total absence of all kinds of butterflies between Eastbourne and Dungeness, with the exception of a very few *Pieris rapae*. Later, normal numbers of common species appeared, but never more than one or two *Pyrameis cardui* or *P. atalanta* were seen, and these fresh specimens at flowers (T. D.). Up to September, *Plusia gamma* and *Plutella maculipennis* were reported absent near Kingsbridge, S. Devon.

#### *Other Records of Insects at Sea.*

From Royal Sovereign Light Vessel, 7 miles S.E. of Eastbourne, specimens of various insects caught were sent in and identified as follows :

July 1st: *Epinephele jurtina* flying N.E. in light S.W. air in overcast, misty weather, temperature 64° F.

August 3rd: Dragonfly, *Sympetrum striolatum*, flying S.W. at 9 p.m. in calm.

August 7th: Two moths, *Dianthoecia capsicola* and *Porthesia chrysorrhea*.

August 27th: Three moths, *Phlogophora meticulosa* (1) and *Agrotis saucia* (2) taken at 9 a.m. in foggy weather.

August 29th: *Chrysophanus phlaeas*, one flying north in a light S.W. wind and misty weather at 1 p.m.

September 2nd: At midnight in a calm, temperature 64°, one *Rumia luteolata*.

September 3rd; *P. meticulosa* taken in a fog at 5 p.m., wind W.S.W., force 2.

### Notes.

These additional records indicate that there was a wide-spread immigration of Whites at the end of July, which crossed the coast-line between Suffolk and Northumberland going to the N.W. It must have amounted to many thousands in all, and all three species were included with perhaps other common butterflies. The following extract from a letter from Mr. John Evershed, F.R.S., may be of interest: "At Ewhurst, near Guildford, on August 6th, there were more Peacock butterflies in this garden than I have ever seen before. On a *Buddleia* shrub there were twelve to twenty at a time with about half that number of *V. urticae*, two or three *P. atalanta*, one *P. cardui*, three Commas, two Fritillaries, and, of course, Whites and Meadow Browns. On August 7th, an equally hot day, all the *Vanessas* had left except two *V. urticae*, but on August 14th one or two fresh specimens of *V. io* and *P. atalanta* were feeding upon it. On inquiry at a neighbour's garden, half a mile distant, I learned that exactly the same thing happened. All the Peacocks vanished on the 7th. It looks like the start of a migration." It would be interesting to know what became of them. With the exception of the report from the Royal Sovereign, dated September 6th, and enclosing a dozen specimens detailed above, no reports from sea have been received during the month and, with the exception of an isolated specimen of *Pyrameis cardui* reported on board the Outer Dowsing Light Vessel on August 2nd, there has been no indication of an immigration of the *Vanessids* this year. Wherever found inland, *P. cardui* has been noted in much smaller numbers than *P. atalanta*, but there has been an abnormal abundance of *Vanessa ia* and *V. urticae* in particular in places where they are often scarce. The myriads of *Plutella maculipennis*, reported at the East Dudgeon Light Vessel off Blakeney Point, Norfolk, on June 9th, have not been located. It is possible that the swarm of this species reported at Scolt Head Island on August 6th may be connected with it (T. D.).

DANAUS PLEXIPPUS IN CORNWALL.—On September 9th I saw a specimen of *Danaus plexippus* flying along the cliffs at Penhale Point,

between Newquay and Perranporth. The specimen was inaccessible as it was flying over the sea, but was close enough for its identity to be quite unmistakable.—D. O. BOYD; Perranzabuloe Vicarage, Callestick, Cornwall.

*COLIAS CROCEUS* IN EAST TYRONE.—*C. croceus* was observed on August 29th at Cookstown, a male flying in the main street; another male was seen in a bog at Annahavil near Dungannon. Both specimens were in fresh condition.—THOMAS GREER; Milton, Dungannon, September 8th, 1933.

*COLIAS CROCEUS* AND *COLIAS HYALE* IN DUMFRIESSHIRE.—Whilst collecting Lepidoptera at Powfoot, Annan, Dumfriesshire, during the first half of August, I saw a *C. croceus* on the 13th and two *C. croceus* and one *C. hyale* on the next day, the 14th. Although I watched diligently until the 20th, I did not see a single example of either species after August 14th. All the butterflies were seen in the early afternoons, flying rather strongly in a westerly direction along the shore and near the low coastal cliffs, every indentation of which they followed. A strong south-westerly breeze was blowing on both these days. I netted the first Clouded Yellow after a half-mile chase over the stones on the shore, and it proved to be a male in excellent condition. The butterflies on the 14th eluded my efforts at capture, and turned out to sea against the prevailing breeze. Only the *C. hyale* allowed itself to be carried back on the breeze when it was disappearing from my sight, but it passed over my head beyond reach. The *Colias* most likely followed the coast-line of Cumberland into the Solway Firth, and were turned into a westerly course when the northern shore was reached. It may also be of interest to mention that *Pyrameis atalanta* were very common, and *Pyrameis cardui* were almost as common.—H. C. S. HALTON, B.Sc.; The Essex Museum of Natural History, Romford Road, E. 15.

*COLIAS CROCEUS*: PROBABLE IMMIGRATION TO S. DEVON.—It is probable that an immigration of *Colias croceus* took place on the south Devonshire coast about August 24th, possibly earlier. In the Ashburton-Bovey district on August 25th there was a marked increase in the numbers of the species, and from 10 a.m. till 4 p.m. the butterfly was constantly seen flying in a northerly direction with a low, steady flight. At Plymouth, on August 26th, 35 to 40 insects were observed in two hours in the extensive limestone quarries bordering Plymouth Harbour (F. W. B.). Again, on August 26th, at Bigbury Bay, J. L. P. reports that "between 4 and 6 p.m. numbers of the Clouded Yellow butterfly were seen over the sands and sea and from their flight they appeared to be on a migratory movement. All the insects immediately flew inland." I have, however, a somewhat conflicting report from a yachtsman, who says that "whilst cruising in my yacht I saw a good many *C. croceus* appear at Dartmouth and also at Salcombe, about the end of July". I understand that the Start Lighthouse reported the butterfly coming in, but



unfortunately I have not the date (see p. 231). However, other reports are expected, and final conclusions can be arrived at.—S. T. STIDSTON (Engr.-Cmdr.); Ashe, Ashburton, Devon.

COLIAS CROCEUS IN DORSET.—During the week from August 13th to 19th I saw several *C. croceus* at Swanage and neighbourhood. Some were apparently freshly emerged and some very worn. Among them were three of the var. *pallida*. A worn one of the latter I kept for eggs; after a week's confinement in a box she laid about 140 eggs during the following fortnight, the last lot, a dozen, being deposited on August 27th. The first laid (August 20th) started hatching on August 28th.—F. W. FROHAWK; September, 1933.

### RECENT LITERATURE.

*British Beetles: Their Homes and Habits.* By N. H. JOY. London and New York: Frederick Warne & Co., Ltd., 1933. Pp. xi + 80. 17 photographic illustrations, 27 plates and 21 text-figures.

This little book may be classed as one of the Nature Studies Series, of which many have been published of late years. They are intended to encourage the study of insects, plants, etc., especially for the beginner. The general idea is good, though personally we consider the late W. E. Sharp's *Common Beetles of our Countryside* (S. W. Partridge & Co., Ltd.), more useful and more suitable for the purpose. The present volume consists of a foreword and six chapters: I. Introduction. II. How to find and capture beetles. III. How to deal with beetles after capture. IV. The life-history of a beetle. V. How to name beetles. VI. Description of species. These are followed by 23 of the plates and an index of 7 pages. The plates are numbered as pages, which makes the book appear to consist of 143 pages. The photographic illustrations on life-histories (Plates I-IV) are by Hugh Main and are, of course, extremely good. The text-figures of the larvae are chiefly taken from Reitter's *Fauna Germanica*; and the figures in the rest of the plates are from the author's *Practical Handbook of British Beetles*, several of which were copied from Spry and Shuckard. As to these figures, it seems that it would be very doubtful if the beginner would be able to recognize his beetles from such enlarged productions—here, again, Sharp's book, quoted above, better meets the case. The work seems to have been written in a hurry, and not sufficient attention has been given to details; thus many inaccuracies have crept in, which will prove very misleading to the beginner.

In criticizing the book more closely the following points may be mentioned: On page 8 *Formica rufa* is called the "red ant". In *British Ants* (second edition, p. 288) I pointed out that the name "Red ant" is used for *Myrmica rubra*. *F. rufa* may be called "Wood ant", "Hill ant", "Fallow ant", "Horse ant", but not "Red ant". Page 9: The author writes, "I suggest the following explanation", and says that the beetles in birds' nests probably live on the flea larvae found in them. In the *Guests of British Ants*,

p. 33 (1927), when referring to *Microglossa pulla* and *gentilis*, two beetles which live in ants' nests and birds' nests, I wrote: "The larvae and life-history of these two beetles are unknown, and Joy's records of the larvae and cocoons of *M. pulla* in birds' nests should refer to fleas, on the early stages of which, no doubt, these beetles partly feed". Page 10: It is suggested that beetles which are not readily killed in laurel should be put straight into boiling water, and then be put back into the laurel bottle. In our experience, if this be done, the beetles will remain stiff for ever. Page 13: "One of the great mysteries of nature is that the larva changes so quickly into an entirely different form, because, in some cases, the structure of the adult is part of the pupa". We must confess we are absolutely unable to make any sense of this sentence. The wonderful work of Fabre is said to be neglected by British Entomologists. We do not agree that this is the case; many of his books have been translated into English, and there is a bust of him in the Insect Gallery in the British Museum. We are not aware that Joy has ever quoted him before; nor does he make use of his work in any way in this book. Page 14: The question how long a beetle lives should not refer to the early stages, which is chiefly a matter of sufficient, or suitable food. I do not think there are many records of the actual length of life of the adult beetle, but Janet records keeping *Claviger testaceus* alive for over four years. I have done the same for two or three years, and I have recorded how an *Amphotis marginata* lived in my ant observation nests for two years and nine months. Page 19: The statement that "each of our beetles has been carefully thought out to fulfil some purpose in the world" is not worth discussing; but it is not evidence of an entirely unbiassed mind. Page 23: *Myrmedonia limbata* is one of the least likely of the genus to be seen running in the paths of the ant *A. (D.) fuliginosus*. It is not attached to any special ant, as is *M. funesta* and some others, and I have only once in my life found it with *fuliginosus*. One cannot say the genus *Myrmedonia* "are parasitical to ants". One does not speak of the lion as "parasitical to the antelope". *Myrmedonias* attack, kill and devour ants. Page 26: Speaking of the genus *Rhynchites*, the most likely blue one to fall into the net is said to be *R. interpunctatus*. This is by no means the case; *interpunctatus* is one of the rarer species, and is attached to crab apple, wild plum, etc. Page 31: The female of *Geotrupes stercorarius* is said to deposit its eggs in horse- or cow-dung, and the larvae to feed on the dung, and when full grown to burrow into the ground underneath and turn into pupae. This is a most astounding statement for an experienced coleopterist to make! Everyone must know that the adult beetle burrows into the ground beneath the dung (hence those large, round holes to be found in such situations) and lays its eggs at the bottom, carrying down dung for the larvae to feed on. It is exceedingly doubtful if a Geotrupid larva could burrow into hard ground at all. *Ceratophyus typhaeus* is said to be found in sandy places frequented by rabbits, and to use the rabbits' dung to provision

its burrows. It occurs, however, in plenty of places where there are no rabbits. I have seen it in numbers in Kensington Gardens, where it was using dead leaves to provision its burrows. Page 32: The true "Rose Chafer" is *Gnorimus nobilis*, and not *Cetonia aurata*. Page 34: *Dytiscus marginalis* is by no means the largest British *Dytiscus*. *D. dimidiatus* is distinctly larger. Page 36: *Hydrous piceus* is not found in ditches, but in ponds, etc. It used to be common in the "Poor Man's" Fen at Wicken. Page 69: *Hister unicolor* is one of the rarer species, not one of the commonest. Page 70: *Scaphisoma boleti* is found under bark on old stumps, etc., impregnated with fungus, but not in decaying fungi. Page 72: *Dermestes murinus* is found in dead animals, birds, etc., in woods, but not in warehouses. Page 78: *Dadopera 10-guttata* is not yellowish with dark marks, but is ornamented with ten yellowish-white spots. There are many other similar statements to which objection could be taken, but space will not permit any further remarks.

HORACE DONISTHORPE.

*Gulliver in the Bush*. By H. J. CARTER. Sydney, 1933. Pp. 234. 9 plates.

The subsidiary title of this entertaining little volume is "Wanderings of an Australian Entomologist"; the main title is not very informative. But it may be added that the author stands at least 6 ft. 2 in., and is metaphorically also something of a giant amongst Australian coleopterists. The book is really a lively narrative of his many collecting expeditions to various parts of Australia, describing the scenery, the flora, incidents of the road, camp life, and so on, and from this point of view is very interesting to anyone unacquainted with Australian conditions. The entomologist will be frankly disappointed. Beyond the oft-repeated statement that so many new species of such and such a family were found here, so many there, there is little reference to insects. There are a few observations on habitats, and occasionally a brief discussion on distribution, but insects other than beetles are only referred to quite incidentally on one or two occasions. The book reads easily, is full of amusing anecdotes and grammatical errors, and is quite well produced.

*Bibliography of Australian Entomology, 1775-1930*. By ANTHONY MUSGRAVE, F.E.S. Published by the Royal Zoological Society of New South Wales, 1932. Pp. viii + 380.

The bibliography is arranged in alphabetical order of authors, collectors, explorers, expeditions, voyages, museums and journals. Short biographies, or references thereto, of authors and collectors and short accounts of expeditions are given in most cases. In the case of journals, tables of dates of publication have been included. Under each author is a list of his papers on Australian insects arranged in chronological order. Where papers contain descriptions of only a few species, these are cited, but in the case of longer papers and

books lists are only given where the work is very old or not readily accessible.

There is an adequate index including lists of authors, etc., arranged under the various insect orders, lists of journals and works of reference, expeditions, collectors, economic insects, medical entomology, veterinary entomology, etc., all arranged alphabetically.

This work contains a mass of valuable information, and should prove very useful to systematists and others working on the Australian fauna. Mr. Musgrave is to be congratulated on the completion of a long and difficult task. W. E. C.

#### *Fourth Report of the Committee on Locust Control.*

This 43-page report, issued by the Stationery Office, is a model of what a report should be. It summarizes admirably the lines of investigation so far followed, the information available as to the incidence of the present serious outbreak of the Desert and Tropical Migratory Locusts, which may be said to have commenced in 1927, lays down a plan for future work, and calls attention to the wide measure of international co-operation already secured. The importance of the work of the Committee can hardly be over-estimated; it is a sad reflection upon the policies of governments that when literally millions are at stake (the present locust outbreak is estimated to have cost more than £6,000,000 in damage with a loss of 5½ million working days), difficulty should be experienced by the Committee in securing adequate funds. One fears that one consequence may be the deflection of the energies of the Committee from the pursuit of the major problem of locating the main breeding-places of the locust, so as to gain control at the sources, to minor problems which can only be productive of local palliatives. Fortunately the Committee is composed of men not likely easily to mistake the shadow for the substance, and their report is most refreshing.

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### SOCIETIES.

THE SOUTH LONDON ENTOMOLOGICAL AND NATURAL HISTORY SOCIETY.—*July 13th, 1933.*—The President in the Chair.—Mr. H. R. Hutchings, of Mitcham, and Capt. E. S. A. Baynes, of Compton, Guildford, were elected members. Mr. de Worms exhibited the Lepidoptera he had taken in Scotland and the north of England in April last, including males of *Dimorpha versicolor*, Scotch forms of *Taeniocampa gothica*, *Panolis griseo-variegata*, *Pachnobia rubricosa*, *Nothopteryx carpinata* and *Lampropteryx suffumata*, etc.; Mr. A. W. Dennis, stereoscopic slides of the plume moth, *Pterophorus galactodactyla*; Mr. H. Moore, the local Diptera, *Ctenophora pectinissimis* and *Echinomyia grossa*, and read notes on their occurrence; Mr. R. Adkin, *Cacoecia crataegana*, a Tortrix, and read notes on its occurrence at Eastbourne; Mr. T. R. Eagles, larvae and pupae of *Ligdia adustata*, calling attention to the rapidity of their growth, also larvae of *Pterostoma palpina*, and the Coleoptera taken at the Ashdown Field

Meeting; Mr. Niblett, the Cecidomyid, *Contarinia pisi*, and the Trypetid, *Tephritis ocapertina*; Mr. Howarth, *Dryas paphia*, from Effingham, July 2nd; Mr. Ashby, 21 species of rare and local Coleoptera presented to the Society by Mr. H. Donisthorpe; Dr. G. V. Bull, three *Abraxas grossulariata* approximating to *hazeleighensis* bred from larvae found in the Zoological Gardens; Mr. C. N. Hawkins, a bred series of *Macrothylacia rubi* from wild larvae, and described his method of hibernating them; Dr. Cockayne, preserved pine-feeding larvae to illustrate the remarks of Mr. Downes on protective coloration. Mr. Jacobs read the report of the Field Meeting at Forest Row on July 9th.

July 27th.—The President in the Chair.—Mr. Wakeley exhibited larvae of *Acidalia floslactata* (*remutata*), and stated that he had bred *Pyrausta aurata* and *Eurrhyncha urticata* from catmint; Dr. Bull, larva and pupa of *Brenthis selene*, second brood, and pupae of *Cosymbia punctaria*, and reported on immigrant Vanessids; he then read a short report of a visit to Rannoch about the end of July. Mr. Eagles exhibited larvae of *Hyloicus pinastri* from Dorset, and the Coleoptera taken at the Benfleet Field Meeting July 16th; Mr. Blair, Chalcids, *Pteromalus puparum*, bred from a single pupa of *Pieris brassicae*, 224 males and 7 females, all of which emerged through a single hole, also an extreme dwarf example of *Hemerophila abruptaria*; Mr. Sevastopulo, a collection of Pyralidae taken at light in Calcutta, and illustrating some 70 species. Reports of the season were made from Torquay, Swanage, Dorset, Devon and Sussex.—HY. J. TURNER (*Hon. Editor of Proceedings*).

ENTOMOLOGICAL CLUB.—Two meetings of the Entomological Club were held at Oxford on Saturday, July 1st, and Sunday, July 2nd, 1933, respectively. On the former date Prof. E. B. Poulton was in the Chair, and on the latter Dr. Eltringham presided. Members present: Mr. Robert Adkin, Mr. Horace Donisthorpe, Prof. E. B. Poulton, F.R.S., Dr. Harry Eltringham, F.R.S., Mr. W. J. Kaye. Visitors present: Mr. H. E. Andrewes, Dr. Malcolm Burr, D.Sc., Mr. E. Bolton-King, Prof. G. D. Hale Carpenter, Dr. F. A. Dixey, D.M., F.R.S., Mr. E. B. Ford, Dr. Karl Jordan, F.R.S., Sir Guy Marshall, F.R.S., Capt. N. D. Riley, Mr. C. J. Wainwright, Cmdr. J. J. Walker, Dr. C. A. Wiggins. On Saturday the party met at the Hope Department, Oxford University Museum, and were joined by many friends at tea. Dinner was served in the evening at Jesus College, where six of the party stayed for Saturday and five for Sunday night. On Sunday the party visited Bagley Wood, and had tea in the Forest Room by kind permission of St. John's College. In beautiful weather they spent a pleasant time in the Wood. Many White Admirals were seen and a few captured. They seemed to be unusually skittish and lively, and the familiar floating flight conspicuously absent. Insects on the whole, however, were far from conspicuous. Dinner was served in the evening in College, and a very interesting evening was spent. The party dispersed on Monday morning.—H. W.-E.

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VOL. LXVI.]

NOVEMBER, 1933.

[No. 846

## PAPILIO LIBYTHERA FABRICIUS.

By A. STEVEN CORBET.

FABRICIUS described two species of Pieridae under the name of "*Papilio libythea*". The first was described in 1775 (*Syst. Ent.*, p. 471), and is now known as *Appias libythea*; the second, described in 1798 (*Suppl. Ent. Syst.*, p. 427), is known as *Eurema libythea*.

The name proposed by Fabricius for the *Eurema* species must be rejected on the ground of its being a primary homonym (*vide* Article 27 of the Rules of Entomological Nomenclature in *Proc. Ent. Soc. Lond.*, 1928, p. 7R). The oldest valid name for the species under consideration appears to be *drona* of Horsfield (*Cat. Lep. E. I. Co.*, 1829, 1 : 137), which was based on Javan specimens. The subspecies from China, Ceylon, India, Nicobar Islands, Burma and Siam, hitherto known as *libythea*, must be known as *rubella* (*Trans. Ent. Soc. Lond.*, 1867 (3), 4 : 323), described by Wallace with type-locality Calcutta.

The valid names for the subspecies of *Eurema drona* Hsf. are : *punctissima* Mats. (Formosa); *hainana* Mre. (Hainan); *rubella* Wall. (China, Ceylon, India, Nicobar Is., Burma and Siam); *fruhstorferi* Mre. (Tonkin, Annam and Siam); *senna* Feld. (Malay Peninsula); *drona* Hsf. (Sumatra, Java, Bali and Lombok); *lerna* Feld. (Southern Moluccas and Timor); *dionysia* Hulst. (Timor Laut) and *zoraide* Feld. (Queensland, New South Wales and New Guinea). It is to be regretted that the fact that the name *libythea* was invalid escaped notice during a recent revision of the genus *Eurema* (A. S. Corbet and H. M. Pendlebury, *Bull. Raffles Mus.*, Singapore, S. S., 1932, No 7, pp. 143-193).

"Iona",  
Cookham,  
Berks.

DANAUS PLEXIPPUS IN CO. KERRY.—I have recently received a fine male of this butterfly, caught at West Cove, near Cahirdaniel, co. Kerry, on September 27th by Miss M. M. Green. The butterfly was found in the garden, where it was refreshing itself at the flowers of white Escallonia and Lavender.

According to the recent letter in the *Times* (October 16th) by Mr. Frohawk, this will be the twentieth specimen reported in the British Islands during the present year. Lieut.-Col. J. C. Donovan tells me that he knows of only one previous record from Ireland—from Castle Townsend, co. Cork, October 20th, 1916, by Major H. Chavasse.—STANLEY KEMP; Beechwood, Weybridge.

A NEW PARASITIC BEE TAKEN BY ADMIRAL LYNES  
IN MOROCCO.

By T. D. A. COCKERELL.

*Nomada lynesii*, sp. n.

♀. Length about 14 mm., anterior wing 11; robust, bright ferruginous and black, without any yellow; head broad, the face below antennae, the simple mandibles (except apically) and the labrum red, as also a narrow stripe behind cheeks, and lateral face-marks, narrowing upward, and ending in a point near top of eyes; a small black band on each side of upper part of clypeus; upper part of head, and cheeks, black, with thin black hair; labrum not modified, except for a rather weak median raised line; clypeus densely punctured, a shining median raised line on upper part; antennae stout, entirely red, third joint about as long as fourth; thorax black, dull and very densely punctured, with thin black hair on the black parts; band on collar, interrupted in middle, tubercles, the strongly bigibbous scutellum, and band on postscutellum, bright red, the scutellum with thin light reddish hair; tegulae shining bright red; wings dilute fuliginous, the stigma clear red; basal nervure going well basad of nervulus; second cubital cell much broadened below, receiving first recurrent nervure in middle; third cubital cell very short; coxae black, the middle and hind ones red at apex; legs otherwise entirely bright red; apical outwardly directed process of hind tibiae large, shovel-shaped, entirely black at tip; abdomen red, extremely finely punctured, black at extreme base of fourth and fifth tergites; apical band of pubescence not enlarged.

Morocco: Perejih I., May 14th, 1923 (*Admiral H. Lynes*). British Museum. Named after the collector, well known for his work on birds. At first sight this appears to be *N. agrestis* Fab., but the hair of thorax is quite differently coloured, and the head and thorax are in general much less hairy. The structure of the hind tibia separates it from *N. chrysopyga* Mar. I have a specimen of *N. manni* Mor., considered to be a form of *N. mauritanica*, and it resembles *N. lynesii* in the thin dark hair of the dark parts of head and thorax, but the scutellum is yellow, and the abdomen has broad yellow bands. Typical *N. mauritanica* Lep., with red abdomen, is nearer to our insect, but Lepeletier says the head is red, with a black line on the vertex, stripe on collar complete, a band on each side of mesothorax above the wings, and there are also two red stripes on hind part of mesothorax, in front of scutellum. The abdomen also is more banded. All these differences do not exclude the possibility that *N. lynesii* is a well-marked variety of *N. mauritanica*, but it seems better to regard it as a species. Dusmet lists 40 species of *Nomada* from Morocco, but does not include *N. mauritanica*. Hedicke (1930) treats *N. manni* as a distinct species.

## NOTES ON THE GEOGRAPHICAL VARIATIONS OF *ARGYNNIS NIOBE*, L.

By ROGER VERITY, M.D.

SINCE the publication of my paper on the geographical variation of *Argynnis niobe* (*Bull. Soc. Ent. de France*, 1929, p. 240), additional material has come to hand that suggests a few further remarks.

One must decidedly make a distinction, in the same way as in *Argynnis charlotta* (= *aglaia*), between the particularly small, pale and dull nominotypical Swedish race and the widespread one of Central Europe, for which the name of *herse*, Hüfnagel, based on the Berlin race to which it was given, must be used. In the south, and notably in the Alpine region of Switzerland, *herse* is usually replaced by a race which is a little larger, of a warmer tinge of fulvous, and with the black markings, including the basal suffusion of upperside, rather more pronounced. This corresponds exactly with the one I had collected in the Carnic Alps, at Sappada, 1300 m., and at St. Stefano di Cadore, 900 m., and had named *alpiumsisenna* (*loc. cit.*). Specimens from Madonna di Campiglio and others from the Kollar, above Bolzano, are like it, and it evidently is the most widespread in the Central Alps, for examples from the Lötschental, at 1650 m., and the majority of those I have found at Bex, 500 m., in the Rhone Valley, well agree with it too. They are exactly intermediate between *sisenna*, Vrtý. (*loc. cit.*), of Carniola and *herse* of northern Germany (I have some *herse* also from the Ballon d'Alsace). It seems as though *herse* often replaces it in the Valais at very high altitudes, judging from examples of St. Luc, 1800 m., in the Val d'Annivers, and in very dry ones, judging from those of the Pfynwald. On the other hand, I have met in the damp meadows of the plain, at Bex, individuals of the opposite variation, which strongly recall *alpiumlaranda*, Vrtý. (*loc. cit.*), on account of their larger size in both sexes than the average of that region, by their clearer, warmer and brighter tone of fulvous, by the thinner black pattern on both surfaces of both wings, including the lighter and less extensive basal suffusion of upperside, and by the reduction and paleness also of the russet patches on the underside of the hind wing, which give it a lighter and yellower aspect. What has struck me particularly is that these individuals stand out amongst the rest on account of the fact they exhibit all these characters together, and I have not found any transitional individuals connecting the *alpiumsisenna* and the near approach to this *alpiumlaranda* form. This is interesting, as it seems to suggest the existence in the Vaud of strains from the northern and central exerges which usually do not interbreed, or whose



hereditary factors keep separate and follow Mendelian laws; in my Bex series they actually stand in both sexes as 3 : 1.

Another interesting race, which has not yet been exactly placed amongst the others of the species, is that of the Hautes Pyrénées. I avail myself of specimens from Gèdre, which have been sent to me, to note that it stands next to *cebennica*, Vrtý., of Concoules, 1400 m., on the Lozère. I have pointed out (*loc. cit.*) that the latter resembles *pinguis*, Vrtý., of the northern exerge by its size and its markings, but that the much brighter and warmer fulvous and the very different underside, where the pattern is extremely thin and partly effaced and the yellow prevails broadly, clearly betray a strong strain of the *laranda*, Frhst., race, of the central exerge, which flies at low altitudes in that part of France. The race of Gèdre exhibits exactly the same underside, transitional to. and sometimes identical with, that of the asiatic *taura*, Röber, and *orientalis*, Alph., never, or extremely rarely in some females, showing signs of silver spots, but it looks quite different from *cebennica* and quite similar to *pinguis* on the upperside owing to the paler and duller tone of the fulvous, and because some females are highly suffused with grey and black scaling, whereas none are of the opposite *laranda*-like form; also, some males have thicker and more shaded markings. One can conclude that here, too, there is a mixture of the central exerge, but in a lesser proportion than in the Cévennes synexerge, owing to the more alpine surroundings. I name the Gèdre race *altapyrenaea* nov., selecting as co-types the series in my collection sent me by Rondou and collected by him, July 2nd-17th, 1925.

In my paper on *niobe* I stated that my specimens from St. Etienne-de-Tinée, in the Maritime Alps, were absolutely identical with *appenninica*. I can now add that others from the Bouilladise, near Marseilles, from Llinas, near Barcelona, and from Cuenca, in New Castile, are a little larger and have more pointed wings, but are no less indistinguishable from individuals from the Apennines. One must conclude, therefore, that the small race *appenninica* of the central exerge has spread westward even further than its giant ally, *laranda*, and my hypothesis that *niobe* has reached Spain by the northern Mediterranean migration route and not, like many other species, by the southern Greco-African one, is again sustained by these facts, as well as by the resemblance of race *altonevadensis*, Reisser, from the Sierra Nevada of Andalusia, to *appenninica*.

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CATOCALA FRAXINI IN SURREY.—It may be worth putting on record that a ♂ *Catocala fraxini* was caught here on September 19th by two small boys, who picked it up in the middle of the road. Its condition was deplorable.—A. E. TONGE; Aincroft, Reigate.

# COLLECTING TRIPS IN ISÈRE AND SAVOIE, ETC., FRANCE: TRICHOPTERA, PLECOPTERA AND NEUROPTERA (S.L.).

BY MARTIN E. MOSELY, F.R.E.S.

IN past numbers of the *Entomologist* I have recorded the results of collecting trips in France made during the years 1923 and 1924. Here an account is given of a holiday spent for the most part in Isère and Savoy during 1925. I have included a few records from the Basses-Alpes and the Alpes-Maritimes, made in 1928 and 1931 whilst travelling to and from Corsica. Full results of the Corsican trips have already been published in *Eos*, and it is convenient to record these few additional captures here.

A glance at the map will show, between the towns of Bourg in Ain and Lyons, a vast expanse of country closely bespread with innumerable lakes and marshes. This area is known as La Dombes and, on the map, has all the appearance of a happy hunting-ground for the collector of Trichoptera.

Accordingly my first halt was at Bourg, whence it is but a short journey to St.-Paul-de-Varax, a village in the immediate neighbourhood of two or three little lakes. Let me say at once that the visit was disappointing. With the exception of two species, the only Trichoptera taken occur rather more plentifully on the borders of the Penn Ponds in Richmond Park.

The first exception is *Setodes lusitanica*, recorded originally in Portugal by McLachlan and subsequently in Spain by Navás under the name *Setodes galaica*. I myself have taken it at Cahors, in Lot, the Basses-Pyrénées and in Corsica. The second exception was a Hydroptilid, *Orthotrichia tragetti*, new to science, but captured by me previously at a lake near Romsey, Hants. As the Romsey examples were not in sufficiently good condition for the genitalia to be accurately figured, this additional capture enabled me to publish a description of the species.

From Bourg I passed on to Grenoble and on by road to Bourg d'Oisans in Isère, a small town on the river Romanche. This river has its source in a glacier and its waters were too cold for Trichoptera, but a small spring-fed stream, La Rive, proved interesting, and along its banks a small caddis-fly, *Agapetus nimbulus*, was abundant. Another species of interest, taken at a cascade discharging into the Romanche, was a *Stactobia*, which I have determined as *eatoniella*, McL., rather hesitatingly in the absence of an opportunity of examining McLachlan's examples, which were taken in the Pyrenees, Savoy, etc. It may possibly be a new species.

From Bourg d'Oisans a visit was made, over the Le Lautaret pass, to Briançon. A stay of an hour or so at the top of the pass enabled me to collect a good series of *Stenophylax ucnorum*, a species peculiar so far to this district.

At Briançon there was hotel accommodation for one night only, though I was offered a berth in a wagon-lits standing in a siding. Accordingly I returned, the next day, over the pass and branched off over the Le Galibier, the second highest pass in France, reaching an altitude of 2658 m., with a view to visiting St.-Jean-du-Maurienne, a small town at the junction of the Arc and the Arvan. These rivers proved barren, as the beds were covered with a bluish mud and no Trichoptera were found excepting at one small side-stream.

One day was sufficient here, and a journey over the Route-des-Alpes brought me to Chamonix-Mont-Blanc, where I obtained many species new to me. There were several good collecting-grounds in the neighbourhood, although the glacier river passing down the valley was too cold for water insects. At Le Buet, a mile or so over the pass, an interesting species, *Halesus ruficollis*, was found, and *Metanoea chapmani* was very abundant.

A few words may be added relating to a very interesting caddis-fly taken in 1928 at Cagnes on my return from Corsica, in a little stream running through the town. This was a new species in the *Beraeidae*, differing so widely from others in this family that a new genus had to be erected to take it. The species has been described in the *Annals and Magazine of Natural History*, 1930. Series 10, vol. vi, under the name *Beraeamyia squamosa*, Mosely, and it is interesting to note that I subsequently took a single male at St.-Jean-Pied-de-Port, in the Basses-Pyrénées.

A day spent at Digne, in the Basses-Alpes, on my return to Corsica in 1931 was practically fruitless. The river there is of the same character as that at St.-Jean-du-Maurienne, and only a single *Trienodes conspersa* and two *Hydropsyche pellucidula* were seen, both species occurring plentifully in Hampshire.

A few *Plecoptera* were taken on this trip, of which *Protonemoura intricata*, taken at Bourg d'Oisans, is of interest, as it occurs also in the Pyrenees.

The following places were visited during the periods indicated :  
Bourg, Ain (243 m.), 5. vii. 1925.

St.-Paul-de-Varax, Ain, 6. vii. 1925.

Bourg d'Oisans, Isère (719 m.), 7-14. vii. 1925.

La Grave, Hautes-Alpes (1482 m.), 14. vii. 1925.

Le Lautaret, Hautes-Alpes (2108 m.), 14. vii. 1925.

Briançon, Hautes-Alpes (1973 m.), 14. vii. 1925.

St.-Jean-du-Maurienne, Savoie (536 m.), 15-17. vii. 1925

Chamonix-Mont-Blanc, Haute-Savoie (1034 m.), 18-26. vii. 1925.

Le Buet, Haute-Savoie (about 1380 m.), 21. vii. 1925.

Cagnes, Alpes-Maritimes, 9. vi. 1928.

Digne, Basses-Alpes (596-639 m.), 8. vii. 1931.

Gorges-du-Loup, Alpes-Maritimes (132 m.), 11. vii. 1931.

## TRICHOPTERA.

### Fam. LIMNOPHILIDAE.

*Limnophilus marmoratus*, Curt.—Bourg d'Oisans.

*L. lunatus*, Curt.—Bourg d'Oisans.

*L. ignavus*, McL.—Bourg d'Oisans.

*L. extricatus*, McL.—Le Lautaret.

*Stenophylax ucenorum*, McL.—Le Lautaret.

*S. nigricornis*, Pict.—Le Lautaret.

*S. latipennis*, Curt.—Le Buet.

*Halesus ruficollis*, Pict.—Le Buet.

*Metanoea chapmani*, Morton.—Bourg d'Oisans, Le Buet.

*Drusus discolor*, Ramb.—Chamonix, Le Buet.

*D. chrysotus*, Ramb.—Chamonix, Le Buet.

*Cryptothryx nebulicola*, McL.—Le Buet.

*Potamorites biguttatus*, Pict.—Bourg d'Oisans, Le Buet.

*Hypnotranus picicornis*, Pict.—Le Buet.

*Apatania fimbriata*, Pict.—Chamonix, Le Buet.

### Fam. SERICOSTOMATIDAE.

*Sericostoma pedemontanum*, McL.—Bourg d'Oisans, Le Lautaret, Chamonix, Le Buet.

*Goëra pilosa*, F.—Bourg, St. Paul-de-Varax.

*Silo nigricornis*, Pict.—Bourg d'Oisans, Chamonix, Le Buet.

*Micrasema tristellum*, McL.—Chamonix.

*Crunoecia irrorata*, Curt.—Chamonix, Le Buet.

### Fam. BERAEEIDAE.

*Beraea pullata*, Curt.—Bourg d'Oisans, La Grave, Le Lautaret, Chamonix, Le Buet.

*B. maurus*, Curt.—Chamonix, Le Buet.

*Beraeamyia squamosa*, Mosely.—Cagnes.

*Ernodes vicina*, McL.—Bourg d'Oisans.

*E. articularis*, Pict.—Chamonix, Le Buet.

### Fam. LEPTOCERIDAE.

*Leptocerus aterrimus*, Steph.—Bourg, St. Paul-de-Varax.

*Mystacides azurea*, L.—Cagnes.

*M. longicornis*, L.—St. Paul-de-Varax.

*Trienodes bicolor*, Curt.—St.-Paul-de-Varax.

*T. conspersa*, Ramb.—Digne.

*Oecetis ochracea*, Curt.—St.-Paul-de-Varax.

*O. lacustris*, Pict.—St.-Paul-de-Varax.

*O. testacea*, Curt.—Cagnes.

*Setodes lusitanica*, McL.—St.-Paul-de-Varax.

#### Fam. ODONTOCERIDAE.

*Odontocerum albicorne*, Scop.—Chamonix, Le Buet, Cagnes.

#### Fam. HYDROPSYCHIDAE.

*Hydropsyche pellucidula*, Curt.—Digne.

*H. angustipennis*, Curt.—Bourg.

*H. instabilis*, Curt.—St.-Jean-du-Maurienne.

#### Fam. POLYCENTROPIDAE.

*Plectrocnemia conspersa*, Curt.—Chamonix, Le Buet.

*P. geniculata*, McL.—Le Buet.

*P. brevis*, McL.—Chamonix.

*Polycentropus flavomaculatus*, Pict.—Bourg d'Oisans.

*Holocentropus picicornis*, Steph.—St.-Paul-de-Varax.

*Cyrnus trimaculatus*, Curt.—Bourg.

*Ecnomus tenellus*, Ramb.—St.-Paul-de-Varax.

#### Fam. PSYCHOMYIDAE.

*Tinodes waeneri*, L.—Bourg, St.-Paul-de-Varax.

*T. aureola*, Lett.—Cagnes.

*T. dives*, Pict.—Bourg d'Oisans, Le Lautaret, Briançon.

*Lyte phaeopa*, Steph.—Cagnes.

*Metalyte fragilis*, Pict.—Gorges-du-Loup.

#### Fam. PHILOPOTAMIDAE.

*Philopotamus ludificatus*, McL.—Bourg d'Oisans, Le Lautaret, Briançon, Chamonix, Le Buet.

*P. variegatus* Scop.—Bourg d'Oisans.

*Dolophilus copiosus*, McL.—Bourg d'Oisans.

*Wormaldia occipitalis*, Pict.—Chamonix, Le Buet.

*W. mediana*, McL.—Cagnes.

*Chimarra marginata*, L.—Cagnes.

#### Fam. RHYACOPHILIDAE.

*Rhyacophila torrentium*, Pict.—Bourg d'Oisans, St.-Jean-du-Maurienne, Le Buet.

*R. proxima*, McL.—Bourg d'Oisans, Chamonix.

*R. vulgaris*, Pict.—Bourg d'Oisans, Briançon, Chamonix, Le Buet.

*R. tristis*, Pict.—Bourg d'Oisans, Chamonix, Le Buet.

*R. pubescens*, Pict.—Bourg d'Oisans, St.-Jean-du-Maurienne.

*Glossosoma boltoni*, Curt.—Bourg d'Oisans.

*G. vernale*,\* Pict.—Bourg d'Oisans.

*Agapetus nimbulus*, McL.—Bourg d'Oisans.

#### Fam. HYDROPTILIDAE.

*Ptilocolepus granulatus*, Pict.—Bourg d'Oisans, Chamonix, Le Buet.

*Agraylea multipunctata*, Curt.—St.-Paul-de-Varax.

*Hydroptila occulta*, Eaton.—Bourg d'Oisans, Chamonix.

*Stactobia eatoniella*, McL.—Bourg d'Oisans.

*Orthotrichia tragetti*, Mosely.—St.-Paul-de-Varax.

*Oxyethira costalis*, Curt.—St.-Paul-de-Varax.

#### PLECOPTERA.

*Perla maxima*, Scop.—Le Buet.

*Chloroperla grammatica*.—Bourg d'Oisans, La Grave.

*Leuctra inermis*, Kny.—Bourg d'Oisans, St.-Jean-du-Maurienne, Le Buet.

*L. teriolensis*, Kny.—Le Lautaret.

*L. moselyi*, Morton.—Le Lautaret.

*L. cingulata*, Kny.—Le Lautaret.

*L. rosinae*, Kny.—Le Lautaret.

*Protonemoura lateralis*, Gerst.—Le Lautaret.

*P. intricata*, Ris.—Bourg d'Oisans.

*Nemourella inconspicua*, Pict.—Bourg d'Oisans, La Grave, Le Buet.

*Amphinemoura cinerea*, Morton.—Le Buet.

#### NEUROPTERA (S.L.).

##### Fam. SISYRIDAE.

*Sisyra fuscata*, F.—St.-Paul-de-Varax, Cagnes.

##### Fam. HEMEROBIIDAE.

*Wesmaelius ~~f~~-fasciatus*, Reut.—Chamonix.

*Hemerobius pini*, Steph.—Chamonix.

\* A variety with hairs on the callosities instead of androconia, similar to that found in the Pyrenees.

*H. nitidulus*, F.—St.-Jean-de-Maurienne.

*H. humulinus*, L.—St.-Paul-de-Varax.

*Micromus paganus*, L.—Le Buet.

#### Fam. CHRYSOPIDAE.

*Chrysopa 7-punctata*, Wesm.—St.-Jean-du-Maurienne.

*C. ventralis*, Curt.—Bourg d'Oisans, La Grave.

*C. perla*, L.—St.-Paul-de-Varax, Bourg d'Oisans, Chamonix.

#### MECOPTERA.

##### Fam. PANORPIDAE.

*Panorpa communis*, L.—St.-Paul-de-Varax, Bourg d'Oisans.

*P. germanica*, L.—Bourg d'Oisans, Chamonix.

DANAUS PLEXIPPUS L. IN SUSSEX.—On September 26th, one of the scholars at Ascham St. Vincent's, in this town, took a *D. plexippus* while it was flying over flowers in the school garden. It is a female specimen in fairly good condition.—ROBERT ADKIN; Eastbourne, October, 1933.

DANAUS PLEXIPPUS IN DORSET AND DEVON.—I recently received a letter from Mrs. M. Wood, dated September 13th, stating: "Col. Wood and I went to Exmouth last week, and on the cliffs between there and Budleigh Salterton I caught a female *plexippus* on September 5th, about midday on a bright sunny morning, with a strong gale blowing from the east. The butterfly was trying to fly out to sea against the wind, but was blown back when I caught it. It is in quite good condition except a chip out of one lower wing."

The most remarkable observations made on the appearance of *plexippus* I know of are six specimens seen off the Dorset coast by Mr. Bower. Towards the end of July last, while 3 miles out at sea, no less than five of these great butterflies passed by his boat, flapping slowly along just above the surface of the sea, making for land. He tells me they were all together, but what struck him most was their leisurely flapping flight, and their great size. Again, remarkable as it is, on the morning of August 16th he was also out at sea, almost in the same place, but about 3½ miles out when to his surprise, another single specimen passed by, heading for the coast; it was flying exactly like the others, and quite differently from any other British butterfly he knows. I happened to be on the Dorset coast that day, which was fine and very warm, with a rather strong easterly breeze. The six specimens alluded to bring the number of *plexippus* seen and captured this year up to twelve, which is the largest number yet recorded in one year. The previous largest number occurred in 1885, when nine were recorded.—F. W. FROHAWK; October, 1933.

## MIGRATION RECORDS.

BY CAPT. T. DANNREUTHER, R.N.

THE following is an abstract of additional records for 1933, collected under the South-Eastern Union of Scientific Societies' scheme. For previous records, see *Entom.*, **66**: 186-190, 209-212, 230-4.

(1) *Records of Insect Movement.*

(1) March 12th: *Pyrameis cardui*, Godalming, Surrey. One flying north. First record for the year (H. T.).

(2) June 7th: *Plusia gamma*, Beaulieu, New Forest. Two flying west (J. J. W.).

(3) August 7th: ? *Pyrameis cardui*, Amble, Northumberland. Fishermen at sea reported "a large quantity of butterflies coming in from sea like a slight snow-storm. They mostly settled on rocks", and from their description were probably *Pyrameis cardui*, as this species was very plentiful comparatively at that time thereabouts (F. C. G.).

(4) August 19th: *Vanessa urticae*, Scolt Head I., Norfolk. One flew in from the sea going south and alighted on highest sand-dune (E. A. E.).

(5) August 20th: 10.30 a.m. to noon, on Gorleston Pier, Suffolk. Seen coming in from sea: five *Pyrameis cardui*, four *P. atalanta* and one each *Vanessa io*, *Pieris brassicae*, *Epinephele janira*, *Vanessa urticae*, ditto one next day (E. A. E. and M. B. E.).

(6) August 24th: Gorleston Pier. Two *Vanessa urticae* and six *Pieris rapae* came over sea from S.E., the latter persisting against the breeze close to the water. A N.W. movement of *Pieris brassicae* and *P. rapae* was obvious in the town (E. A. E.).

(7) August 20th-21st: East Dudgeon Light Vessel. One *P. atalanta* seen with one *Vanessa urticae* on August 21st and the previous day, August 20th, in a light S.W. wind, two *V. urticae* drifted lazily to northwards after resting on board (S. G. Sharman).

(8) August 22nd-30th: Outer Dowsing Light Vessel, 30 miles east of Spurn Head, Humber. *Pyrameis atalanta*, all seen flying east, irrespective of variable light winds; three on 22nd and one at 7.15 p.m. on 30th. Specimens sent in (J. W. R. Reeve).

(9) August 27th-31st: Gorleston, Suffolk. A few stragglers seen coming in from sea: on 27th, one *Pyrameis atalanta* going north fast against wind; another on 31st, flying against a strong west wind at 2 p.m., followed by three *Pieris brassicae* and two *Coenonympha pamphilus*. The *C. pamphilus* fluttered in and settled on the end of the pier (E. A. E.).

(10) August 25th: *Vanessa urticae*, Bordon, Hants. Dozens



flying west at 3.30 p.m. in a light S.E. wind, but many remained on thistles (R. E. W.).

(11) August 27th : *Colias hyale*, Hardwick, Berks. Two males flying west in calm afternoon, warm weather (R. E. G. S.).

(12) August 29th : *Macroglossum stellatarum*, Start Point Lighthouse, Devon. Several seen flying N.E. at 2 a.m., with a light S.W. wind, after foggy evening. Four sent in (A. W. Godfrey).

(13) August 31st : ? *Colias croceus*, Galley Hill, on coast, between Hastings and Bexhill. At noon, in a warm sun, with a light S.E. wind, a cloud of hundreds of yellow butterflies was seen by two lady visitors, who stated that they came over the sea, flying north, with a great number in visual range at one time. Further details and confirmation wanting, but the Curator, Bexhill, recorded several *Colias croceus* in the vicinity during next two days (H. J. S.).

(14) September 2nd : Kennack, near Lizard, Cornwall, *Pyrameis atalanta* and *Vanessa io* seen coming in from sea ; numbers not stated (F. G. G. P.).

(15) September 3rd : At Woolacombe, N. Devon, between 1 and 6 p.m., in hot sunshine, with a light N. breeze, dozens of *Pyrameis atalanta* were seen flying slowly in from sea, going south (M. G. P.). [Note : *Trans. Ent. Soc. Lond.*, June, 1933, 81, pt. i, 24 ; C. Elton and Dr. T. G. Lonstaff reported fresh *P. atalanta* flying south from Lundy Island, between 4 and 7.30 p.m. on September 4th, 1927.]

(16) September 25th-30th : *Pyrameis atalanta*, Owers Light-Vessel, off Selsey, one captured flying east, in a light S.S.E. wind, on 25th ; two out of five seen, taken flying S.E. in fog on 30th, wind E.N.E.

(17) September 30th : *Pyrameis cardui*, Owers Light Vessel, one flying S.E. in a light E.N.E. wind and misty weather, temperature 66° F. ; specimen sent in—the only migrant reported going S.E. (H. J. Hollis).

(18) September 5th : *Danaus plexippus*, Budleigh Salterton, one female, flying east (M. W.).

(19) While crossing from Dover to Calais on the morning of July 27th, 1933, three specimens of *Pieris* seen at sea and believed to have been all *P. brassicae*. The first was seen almost exactly half-way across, the second immediately afterwards, and the third some two or three miles from Calais. All were flying towards the English coast (A. Steven Corbet, Cookham, Berks).

## (2) First Appearances Reported.

*Pyrameis cardui* : March 12th, Godalming, Surrey. On Thursley Common, about 400 ft. above sea-level, one seen flying north.

March 11th and 12th were warm days, with temperature 62° on south coast. Believed to be the earliest record of a migrating butterfly in England (H. Thompson, Thursley, Surrey); May 23rd, Leeds, one (F. C. G.).

*Colias croceus (edusa)*, August 7th, at North Bull, Dublin, eight males and one female, associated with *Pyrameis cardui*, *P. atalanta* and *Vanessa io*; never saw so many before (J. I. P.). Mr. Stelfox reports (*I. N. Journal*, September) *C. croceus* all up the east coast of Ireland and even west of Wicklow Mountains (W. M. C.); August 14th, Ayton Moor, Yorks, one, never seen here before (Sir J. P. Fry); August 26th, Pooley Bridge, Ullswater Lake, one male (G. Bolam); August 26th, S. Carlton, N. Lincs, one v. *helice* (Arthur Smith); end of August, Annan, Dumfries, one (H. M.); August and early September, Ilfracombe district, dozens (M. G. P.); October 1st-15th, large numbers at Chidham, W. Sussex (L. E. Hulls). (See also p. 258 *infra*.)

*Colias hyale*: September 6th, Waddington, N. Lincs, one (H. I. I. W.). (See also p. 257 *infra*.)

*Acherontia atropos*: August-September. Certainly more than seventy larvae or pupae have been found during potato digging, spread all over the British Isles. During early September, fifty-one larvae and pupae were reported at Chidham, W. Sussex (L. G. H.). Moths already reported at Haslemere, Brancaster, Chidham, Falmer, Firle, Gorleston, Beccles, Hastings, Cheltenham, Ilchester, High Wycombe, Ashburton, Norwich, Doncaster, Hull, Castledawson (Ireland).

*Herse convolvuli*: August 31st, Reading, one worm (W. A. S.); end of August, five in south Ireland and one at Jedburgh, Scotland (F. C. G.); September 1st, Hastings (W. R. B.); first week September, at Ilfracombe, dozens of both sexes, of which nine were captured at *Nicotiana affinis* blooms (M. G. P.); September 5th, Monkseaton, Northumberland (G. L. P.); September 8th, Liphook (C. S.); September 13th, Chopwell (850 ft.), Durham (P. C.); September 26th, Beccles, female (E. T. G.); September 28th, at Lowestoft and Yarmouth (E. A. E.); October 2nd, Beccles (E. T. G.); also one at Carlisle (F. H. D.) and one brought to North Shields, found in a drifter about September 1st (F. C. G.); September 5th to October 2nd, 37 captured at Polegate of about 100 seen (J. P. Lloyd); October 9th, one at Folkestone (E. C. Joy).

*Celerio livornica*: August, one at Hull (T. S.); September, one at Newton Abbot, Devon (S. T. S.).

*Macroglossum stellatarum*: June 4th, Uffington, Shrewsbury (E. R. S.); end of June, Thornton Dale, Yorks (E. S. J.); August 2nd, another near Shrewsbury (E. R. S.); August, Skipton, Yorks (R. W. W.); September 10th-16th, seven press reports in

Yorkshire; October 2nd, Leeds, several (W. D. H.); October 5th, Hastings, last one seen (A. B.); at Hod Hill, near Blandford, June 7th, and Swanage, August 10th (B. H. Cooke); St. James's Park, London, September 29th (S. B. Hodgson); swarming at Eastbourne in early September (H. O. Wells). Generally commoner than usual in autumn months.

*Danaus plexippus* (*Anosia archippus* Fb.): A record number of observations in South England and Wales and Ireland were reported between July and October, representing probably 21 individuals, of which 5 were captured (ref. *Entom.*, 66: 225, 234; *Times*, October 6th and 13th). Dates and places, where seen or taken, were as follows: September 2nd, Bude, female taken (B. J. L., p. 225 *supra*); 5th, Budleigh Salterton, female, flying east (M. W.); 9th, Newquay, Cornwall (D. O. B., p. 234 *supra*); 18th, Bexhill, and 19th, Boreham Street, Sussex (K. J.); 20th, Lizard, Cornwall (P. H. D.), and Lymington, Hants (J. N.); 21st, Tenby, S. Wales, one taken (H. M.), and Bognor Regis (R. J. H., *Times*, October 4th, 1933); 26th, Eastbourne, one taken (R. A., p. 250 *supra*), and perhaps same individual seen same day at Bexhill (W. A. E.) and Little Common, Sussex (H. G. McL.); 27th, and again 29th, Lizard, Cornwall (P. H. D.). Mr. F. W. Frohawk reports (see p. 250) that five were seen at once in Dorset, and one in the same place by the same observer later. Mr. S. D. Gibbard reports that on October 1st, at Exmouth outer beach at 1.30 p.m., he observed one flying westwards in slight easterly wind in overcast weather; and Dr. Kemp reports another from Co. Kerry, September 27th (see p. 241 *supra*). Lt.-Comdr. G. S. Griggs records yet another, seen at Blagdon, near Bristol, on October 12th; and Mr. Crawford writes that one was seen on September 4th, 5th and 6th on the Howth Promontory, co. Dublin.

### (3) *Abnormal Abundances Reported.*

A general scarcity of Lepidoptera in the south, after the disappearance of spring migrants, was followed by an abnormal abundance of summer broods of these species, particularly in the north, with little evidence of subsequent migration. Complete reports not yet available, but some of interest are quoted:

F. T. Baker writes: "At Lincoln, larvae of *Pieris brassicae* have been numerous in gardens, but very small in proportion to *Pieris rapae*, which latter proved most destructive this year".

J. Eliot Moss, Farnham Royal Laboratory, writes: "There has seemed to be a very peculiar distribution of *Pieris brassicae* in England this year. The adults and larvae appear to be totally missing from Bucks and Berks, Kent, Hants, etc., and, in fact, throughout southern England with the exception of Cornwall. On

the other hand, Cambridge and Durham have received such numbers of these insects that they have amounted to a plague. *P. brassicae* has also been reported from the north of Wales." Note: *Yorkshire Post*, September 18th, reported that on Gilesgate farms, Durham, cabbages and sprouts were destroyed. Thousands of caterpillars were crushed in the streets by traffic.

F. H. Day writes: "At Carlisle, *Pyrameis atalanta* more abundant than I have known it for forty years, *P. cardui* quite common, *Vanessa io* and *Colias croceus* seen after many years' absence. Moths have been scarce, although *M. stellatarum* turned up a few times and *H. convolvuli* also."

Sir John P. Fry, Bart., writes from Great Ayton, Yorks, that on the moors at 900 ft. above sea-level on August 24th he saw about 200 *Pyrameis atalanta* (130 counted feeding on heather blossom just out) and over a dozen *P. cardui*. Not seen so many for forty years there. All the Whites very numerous this year, whereas a few years ago they were getting scarce.

At Berry, Glamorgan, in summer, a count was made of 40 butterflies on a single *Buddleia*, comprising 12 *P. atalanta*, 6 *P. cardui*, 10 *V. urticae*, 4 *Vanessa io* and 8 *Pieris brassicae* (E. S.).

At Wick, North Scotland, on August 10th, 10 fresh *Pyrameis atalanta* seen on *Inula glandulosa*, and on 29th, 17; numbers beyond all experience all over Caithness county (L. D. D.).

In the west, *Colias croceus* became very abundant all over the south coast of Devon (saw 20 in forenoon, August 25th—S. T. S.) and Cornwall (E. R. S.); at St. Just over a hundred a day were reported (F. W. F.).

On Hambledon Hills, 20 miles north of York, at the end of August, it was impossible to walk half a mile over heather and gorse without seeing 20 to 30 *Pyrameis atalanta*; they were quite the commonest butterfly there (G. H. H.).

At Ryhope, Durham, on September 2nd, counted 20 *Pyrameis atalanta*, 6 *P. cardui* and 1 *Vanessa io*; the latter has been absent for many years (F. C. G.). *P. atalanta* very abundant in Inverness (J. W. C.).

At Drayton, Norfolk, 22 miles west of Gorleston, on September 10th, 25 *Vanessa io* were seen suspended from the roof of an outhouse (G. J. C.) (cf. *Entom.*, 66: 210 *supra*).

On the Humber shore in June, travel-worn *Pyrameis cardui* laid eggs on thistles, and on September 23rd, freshly emerged butterflies were seen feeding on sea lavender.

At Bovisand, Plymouth, over 50 *Pyrameis cardui* with 20 *P. atalanta* seen on September 29th (S. T. S.).

At Hastings and St. Leonards, in public gardens, a count was made of the butterflies feeding on dahlias and veronica. Between

2 and 4 p.m. on September 30th, the maximum for the season, 55 *Pyrameis atalanta*, 14 *P. cardui*, 14 *Vanessa urticae*, about half a dozen Whites, but nothing else. On October 12th a similar count gave 6 *Colias croceus*, 6 *Pyrameis atalanta*, 5 *P. cardui*, 1 *V. urticae*, 1 *M. stellatarum* and only 1 *Pieris rapae*. The *C. croceus* were worn and wild (T. D.).

At Aberdeen there has been a marked scarcity of *Pieris brassicae* and *Vanessa urticae*, usually quite common (J. A. H.).

R. M. Prideaux writes at Brasted, Kent: "Larvae of *Vanessa urticae* in places completely defoliated nettles. Larvae of *Pyrameis atalanta* were singularly free from parasites as compared with last year. *Polygonia c-album* seen at Brasted Chart and Reigate."

#### (4) Other Records of Insects at Sea.

An aeroplane pilot reported that, flying between Paris and Basle, at 8000 ft., in mid-September, wasps were killed on his windscreen. He added that he had often encountered wasps at 3000 ft. to 4000 ft. over the middle of the English Channel (*The Field*).

Report from Haisboro' Light Vessel, 11 miles E.N.E. of Cromer: July, last week. Swarms of the Hover Fly, *Syrphus corollae*, of which one specimen sent in was identified by Claude Morley. August 6th, at 4 p.m., a dozen *Ania emarginata* seen, and one sent in for identification. There was a light S.E. wind and a calm sea, in which "several were noticed floating down on the ebb tide, from S.S.E. at 2 knots, for some hours; there must have been thousands on top of the water as far as could be seen. Occasionally there was a break in the quantity" (W. F. Willgress). August, first week, several Humble Bees, *Bombus pratorum* (two taken), also a few Social Wasps, *Vespa vulgaris* L. (one taken). In mid-August, a Dragonfly, *Aeschna cyanea* Müll., male, in good condition, was taken. Wind, light S.E. August 18th, in light E.S.E. wind, a few more moths, thought to be also *Ania emarginata*, were seen about the ship and in the water, but none taken. August 19th, one Hover Fly, taken and identified as *Catabomba pyrastris*. August 22nd, in a light S.W. wind, two *Pyrameis atalanta* seen, one sent in (W. F. Willgress).

Report from Outer Dowsing Light Vessel, 30 miles east of Spurn Head, Humber. At 5.30 a.m. on August 14th, in S.S.W. wind, force 3, a fine *Noctua c-nigrum*, male, was taken and sent in. August 15th, at 5.30 a.m., in a S.E. wind, force 3, three *Ennomos alniaria* seen; a male specimen sent in. August 20th, after a calm, warm night, a *Pararge megera* was caught when flying east at a moderate speed in a west wind, force 3. The one sent in was the only one seen. August 25th, at 7.15 p.m., after a calm, misty

day, an *Amphipyra tragopogonis* was taken and sent in; wind was S.S.W., light.

No White butterflies were seen from the Haisboro', though looked for, but some immigrants were observed by the Cromer Knoll Light Vessel, 20 miles further north.

The Owers Light Vessel, 7 miles off Selsey, took one *Phlogophora meticulosa* at 12.30 p.m. on September 26th, in a light east wind, after heavy rain in morning (H. J. Hollis).

#### Note.

To complete these reports for the season it is hoped that recorders will send in collected record-cards, with their observations upon them, to the Hon. Secretary, during the first week of November. Records of the Scarce Vagrants (Class C), observed during the season, are also desired.

Windycroft,  
Hastings.

### NOTES AND OBSERVATIONS.

**COLIAS HYALE IN ESSEX AND CAMBS.**—The following have been taken by my friend, Mr. G. Harrison, and myself flying over lucerne: two on the Gog Magog Hills, Cambs, on August 25th, and one at Battlesbridge, Essex, on September 1st.—W. S. GILLES; Bocking, Braintree.

**COLIAS HYALE IN OXFORDSHIRE.**—This evening, about 7 o'clock, I took a perfect female *Colias hyale* in a field of lucerne here. I saw two others, but captured only one.—FRED B. BRAHAN; Grey Walls, Brize Norton, Oxfordshire, August 30th, 1933.

**COLIAS HYALE IN EAST KENT.**—Having been informed that *C. hyale* had been seen this year, I went out to look for it on August 13th. I was fortunate enough to find a field between Dover and Sandwich, in which several were flying. I took seven, including a fine female of exactly the same yellow colour as the males. The butterflies seemed to be tending to move across the field in a north-westerly direction, and when I went back to the same place in the afternoon not one could be seen. A strong S.E. wind was blowing all day.—J. H. B. LOWE (Capt. R.E.); 69, Oakwood Court, Kensington, W. 14.

**ARGYNNIS PAPHIA VAR. VALESINA IN GLOUCESTERSHIRE.**—On July 2nd, 1933, and also on the 23rd, my wife took a specimen of *Argynnis paphia* var. *valesina* in fine condition on bramble blossom in the Cotswold Hills, Gloucestershire. *A. paphia* was flying in

numbers at the time. These *valesina* are quite as dark as specimens obtained in the New Forest.—OLIVER H. WILD; 3, Hatherley Road, Cheltenham, Glos.

**COLIAS CROCEUS IN DORSET.**—This species was in fair numbers at Shillingstone, Dorset, this year, including var. *helice*.—C. H. BLATHWAYT; Amalfi, South Road, Weston-super-Mare.

*In Wilts.*—Solitary specimens were observed at Marlborough on August 12th and 15th this year.—G. CRAWFORD; Trinity College, Cambridge.

*In Bucks.*—On September 18th I saw *Colias croceus* flying on the outskirts of Chesham, and later at rest on *Buddleia*.—JAMES W. WOOLHOUSE (jun.); Hill House, Frances Street, Chesham, Bucks.

*In Cornwall.*—In North Cornwall between August 21st and September 5th, *Colias croceus* was plentiful in the district round Newquay, but I only saw one *Pyrameis cardui*. On August 30th and 31st I saw several *Macroglossum stellatarum* flying round Spur Valerian.—B. A. THORN; Ivybridge House, Broxbourne, Herts.

*In Monmouthshire and Herefordshire.*—The abnormal summer, which has given all butterflies a good opportunity of passing through all their stages with the minimum of casualties from weather, has produced, during the past month, numbers of *C. croceus* in the valley running between Abergavenny and Hereford. In a field some three miles north of Abergavenny, which I visited because I thought it would contain many butterflies, and I merely wanted to look at them, I found a large colony of Clouded Yellows. The peculiarity of this field, or rather area, was that it contained typical *C. croceus* ground, that is, of a dry South Down character, but sloped down to a marshy area with a wood and trout stream at the bottom. The *croceus* were all over the marshy ground as well as higher up. I do not think that immigration or migration had anything to do with the presence of these butterflies. One day one flew over my house from north to south with a west wind; at another time one flew over south to north with an east wind. On the ground in question they flew backwards and forwards in the usual Clouded Yellow way, always in a hurry. It was just a question of a fine, hot summer. In the field in question there were more *Vanessa io* than I have ever seen anywhere in my life, also a sprinkling of *Pyrameis cardui* and *Polygonia c-album*. These two latter were common, but the *io* were in myriads.—B. TULLOCH (Brig-General); Hill Court, Abergavenny.

*Near Plymouth.*—In addition to the frequent appearance recently of *croceus* in the Plymouth area in small numbers, it should be of interest to students of migration to report the occurrence on August 26th of about 40, in a restricted area in some local limestone quarries, at Turnchapel, on the south and seaward side of the estuary of the R. Plym. They were fluttering, often in pairs, over the common Valerian and Melilot which grows there in profusion, between 10

and 12 o'clock in the morning.—C. W. BRACKEN, F.R.E.S.; 16, De la Hay Villas, Plymouth.

*In Kent.*—After my experience with *Colias croceus* at Swanage, a day in Kent on August 27th had rather surprising results. The day was perfect, and from the number seen at Swanage I expected to find them abundant. Not a specimen was seen until well past Sittingbourne, when one was seen in a lucerne field. Only two more were seen throughout the entire day, but although lucerne fields were few and far between, eight *Colias hyale* were taken and four more seen, all but one in excellent condition. On the previous day, on a run round Brighton, not a single *Colias* was seen, and it would seem that the migration of *C. croceus* this year was evidently much more towards the S.W. than the S.E. It will be interesting to hear the experiences of others with the two species.—RUSSELL JAMES, F.R.E.S.; Dial House, Ongar Park, Essex.

[Mr. W. E. Busbridge writes that he saw *C. croceus* at Broadstairs on August 13th, but from reports received from various sources it would seem that in East Kent this species has been little more numerous than its ally *C. hyale* this year.—ED.]

*In Berkshire, etc.*—On August 30th of this year I saw a male *C. croceus* flying in a clover field about a mile from White-horse Hill. This is the first I have seen in the county since 1929. On the same day I visited the valley at the foot of the hill, but there was nothing flying, although it was a blistering hot day. I visited this spot in 1930-1931 and found the same species as E. B. Ford mentions in his notes (*Entom.*, 65:284). I presume this scarcity was chiefly due to the abnormal summer, which made everything exceptionally early. I saw other *Colias croceus* at Westward Ho, and near Aberystwyth, N. Wales.—W. STEPHEN-JONES; St. Edmund's School, Canterbury, October 7th, 1933.

ACRONYCTA AURICOMA AND LEUCANIA ALBIPUNCTA IN KENT.—On August 4th, while collecting on the coast of Kent, I had the good fortune to take at sugar a fresh specimen of the Scarce Dagger. An easterly wind was prevailing at the time, and there were very few visitors to the patches. I believe this to be only the third record of this species in this country within the last twenty years. I gather that the other two were for last year, 1932. This insect may be readily distinguished from *Acronycta rumicis* by its paler and smoother ground-colour, more sharply defined markings and closer general resemblance to *A. menyanthidis*. On August 14th in the same area I captured also at sugar an example of *Leucania albipuncta*, while on the 16th, in the same locality, I took three further members of this species out of a total of nine recorded on that night. I understand that this Wainscot has also reappeared in Hampshire and Dorset, where it had not been taken for a good many years.—C. G. M. DE WORMS; Egham, September, 1933.

DWARF PIERID BUTTERFLIES.—In the spring of 1929 there were a number of undersized *Pieris napi* flying in the Rother Marshes.



I have four under 35 mm., the smallest being a male measuring 32.5 mm. (May 19th, 1929). On April 6th of this year I took a female measuring 33.5 mm. I have also a male *Pieris brassicae* measuring 42 mm.—G. V. BULL; Sandhurst, Kent.

**OECOPHORA BRACTELLA LINN. IN GLOUCESTERSHIRE.**—On July 6th, 1933, I saw a specimen of this beautiful and very local Tineid in the Forest of Dean. It was on an oak leaf growing on a stump, and as it was turning round and round in the bright sunshine, thinking it was about to fly off, I endeavoured to sweep it up with my net, but was unsuccessful, for it was nowhere to be found. A close search of the neighbourhood by Mr. J. F. Bird and myself failed to locate it, so that we must live in hopes of a capture on some future occasion. It is interesting to note that in Wood's *Index Entomologicus* (1839) it is included in his Doubtful British Species, and is the last one figured in that work, being No. 72 on Plate LIV. Wood remarks: "supposed by Curtis to be British". It has not apparently been observed in our county before.—C. GRANVILLE CLUTTERBUCK, F.R.E.S.; 23, Heathville Road, Gloucester, July 15th, 1933.

**AGROTIS SAUCIA FEEDING ON TOMATO FRUIT.**—The gardener (Mr. Bellamy) at Holme Island, Grange-over-Sands, reported that serious damage was being done by caterpillars to his tomato plants in the glass-houses. He brought a few to Mr. J. Davis Ward, F.R.E.S., on July 12th, who handed them to me to try to rear. The larvæ were feeding on both the green and ripe fruit and some of the tomatoes were almost eaten away; the caterpillars were almost embedded in the soft pulp. They were nearly full fed, and pupated about July 16th. The moths, which proved to be *Agrotis saucia*, emerged between August 11th and 15th.—ALBERT E. WRIGHT; Brunleigh, Kent's Bank Road, Grange-over-Sands, October 10th, 1933.

**AN INLAND RECORD FOR THEOBALDIA (CULICELLA) LITOREA, MARSHALL AND STALEY (DIPTERA, CULICIDAE).**—In the *Entomologist* of August, 1928, P. G. Shute described a variety of *Theobaldia (Culicella) morsitans*, Theo., taken in salt-marshes at Walton-on-the-Naze (Essex). He gave it the name *Theobaldia (Culicella) morsitans* var. *litorea*, and regarded it as a salt-marsh variety of *T. morsitans*. In *Parasitology*, March, 1933, Marshall and Staley, having examined a considerable amount of material, raised Shute's variety to the rank of species. Most of their specimens were from salt-marshes at Hayling Island, and a record from near the Little Sea, Studland, was also made. Specimens of *T. litorea* were, however, also found in the Cambridge collection of the Rev. L. Jenyns under the name *T. morsitans*. These specimens, taken about 100 years ago, were from Swaffham Bulbeck, a fenland locality some ten miles from Cambridge. In a letter to me Marshall pointed out that this was the only inland record, and that he would be easier in his mind when a modern one was obtained, as in 100 years specimens might get mislabelled. Accordingly, towards the end of May I sent to Hayling Island 21

larvae collected from Stow-cum-Quy Fen, which lies between Cambridge and Swaffham Bulbeck. Marshall and Staley found that all these larvae were fourth instar and that the ratio of tuft hair to length of siphon was '40. This figure being common, they were unable to say whether the specimens were *Theobaldia morsitans* or *Theobaldia litorea* until the adults emerged. They then found that 18 were *T. litorea* and 3 *T. morsitans*. *T. litorea* would, therefore, appear to occur in the fenlands and is not confined to coastal marshes.—T. T. MACAN; New Park, Axminster, Devon, August 9th, 1933.

MORPHO ACHILLES, L.—I should like to add the following observations to Mr. Sheldon's interesting notes on *Morpho achilles* L. published in the *Entomologist* for September. In 1926, when I was collecting for some months on the River Amazon, I experienced at first great difficulty in capturing this species; in fact I could not even capture one to use as a decoy! However, I chanced to find that the males were attracted by anything blue, and after I had pinned a piece of bright blue notepaper to the front of my hat, I had no further trouble in capturing them. It was interesting to note that the butterfly appeared to be attracted actually by the colour, as it would continue to fly round and round when it could no longer possibly think that perhaps the paper might be another insect of the same species. The same remarks apply equally to *M. menelaus*, although *M. rhetenor*, a species which seldom flew below 15 to 20 ft. from the ground, or after 10 a.m., would fly by without appearing even to notice my blue notepaper.—W. B. L. MANLEY.

NOTES ON THE SEASON OF 1933.—In this district the season has, on the whole, been a good one for butterflies. On May 18th *Leucoptasia sinapis* was abundant in a wooded locality in Herefordshire. One *Colias croceus* was seen here on August 10th, and one about two miles away a day or two later. Of the "Whites" the most notable was *Pieris napi*, which was common in the spring and swarmed all over the place during the last week of July, giving the impression that it constituted 70% or 80% of all the Whites then on the wing. Incidentally I took one dwarf specimen just under 1½ in. across. *Polygonia c-album* and *Pyrameis cardui* occurred during August in my garden, but were not really common; *P. atalanta*, *Vanessa io* and *V. urticae* were in good numbers. *Argynnis paphia* was rather more common than usual, but *A. aglaia*, which used to swarm here about fifteen years ago, was decidedly scarce, and I did not see *A. adippe*. *Lycaena icarus* was seen only occasionally, and then only in ones or twos, but there were rather more on the Cotswolds, round Crickley Hill, together with a fair number of *L. coridon* on August 4th. In the same locality from July 4th to 11th *Melanargia galathea* was abundant.

The season for moths began fairly well, and during late May and early June there were some nights when the petrol lamp produced good bags, including *Smerinthus populi* and *S. ocellatus*, *Drymonia chaonia*, *Pheosia dictaeoides*, *Dasychira pudibunda*, *Drepana falcataria*

and *D. binaria*, a few *Demas coryli* and a nice lot of *Eurymene dolabraria*. But with continued dry weather and clear nights the number of moths steadily decreased, and after midsummer light became practically useless, and sugar was also unproductive, with a few exceptions, e. g. about mid-July, *Habrosyne detersa* and *Thyatira batis* were rather common, and from then to the end of August there were any amount of *Amphipyra pyramidea*. I took one specimen of *Hemaris tityus* in my garden, on *Buddleia* flowers, at about 7 p.m. on August 3rd—an unusually late date and hour for this moth; and from the end of July to date of writing (September 6th) there have been some numbers of *Plusia festucae*; Mr. R. Humphreys, of Usk, took four of the latter in his garden, and I have taken three more in the neighbourhood; all of these were on flowers of Valerian or Lavender.—G. F. CROWTHER; Bettws Newydd, Usk, Mon.

NISONIADES TAGES: SECOND EMERGENCE.—It may be of interest to record that *N. tages* was to be found commonly on the undercliff between Seaton and Sidmouth on August 16th. *Colias croceus* was very abundant throughout Devonshire about this time.—J. ANTONY THOMPSON; Tan-y-bryn School, Llandudno August 18th, 1933.

MOMPHA SCHRANKELLA, HUBN.—When collecting with Mr. Fassnidge on June 18th this year, we searched for the larvæ of the second brood of this species in a wood near Southampton where Mr. Fassnidge had previously captured some imagines. We found several patches of *Epilobium palustre*, and noticed that the tips of some plants were drooping in a manner very similar to the drooping of the shoots of spindle caused by the larva of *Hyponomeuta plumbella*, Schiff. On opening one of the shoots we found a very minute larva, and examination of further plants revealed a larva just beginning to mine at the base of a leaf near the top of the plant. Mr. Fassnidge decided to visit the spot again nearer the time when the larvae would be full fed, but as I could not do this, I collected some of the drooping tips—a few only, as I was doubtful of being able to rear the larvae. I placed the tips in a glass jar and within a few days larvae had entered several of the leaves and made transparent blotches. Having no fresh leaves of *E. palustre* I put in the jar some leaves of *E. montana*. The larvae readily entered these leaves, so I transferred them to a growing plant of *E. montana*. In due course 22 imagines emerged. Evidently some of the tips I collected contained more than one larva. Mr. Fassnidge tells me that he visited the same wood about a fortnight later and had great difficulty in finding any mined leaves owing to the dense growth of the herbage. He managed, however, to secure a few, but these unfortunately produced only ichneumons.—LEONARD T. FORD; St. Michael's, Bexley.

COLOUR VARIATION IN LARVAE OF NOTODONTA ZICZAC.—Last autumn (1932) I took two very small larvae of this moth on ordinary poplar in my garden. In June, 1933, I took two more, and also six or seven others on a white poplar about 10 yards away. All

those on ordinary poplar were a deep purple brown, almost appearing black, and resembling the blackened tips of damaged or decayed leaves. The larvae on white poplar were of a totally different colour: a pale brownish grey, with a shade of mauve, and having rather the appearance of having been dipped in flour. They very closely resembled the young shoots of the white poplar. I should have liked to experiment with a change of food, to determine whether the difference in colour were due to chemical causes, or to the larvae belonging to two different races, each adapted to a different tree, but unfortunately most of them shortly produced a fine crop of ichneumons.—G. F. CROWTHER; Bettws Newydd, Usk, Mon

## SOCIETIES.

ROYAL ENTOMOLOGICAL SOCIETY OF LONDON.—*Wednesday, October 4th, 1933.*—Prof. E. B. Poulton, F.R.S., President, in the Chair.—*Election of Fellows.*—The following were elected Fellows of the Society: F. B. Notley, c/o Agricultural Department, P.O. Box 338, Nairobi, Kenya Colony; P. H. Simon, 4, Stanmore Hall, Stanmore, Middlesex; J. Richardson, 104, Bothwell Street, Glasgow. *Obituary.*—The death of Messrs. T. A. Coward, E. J. Godfrey and C. F. Curtis Riley, Fellows of the Society, was announced. *Exhibits.*—Prof. G. D. Hale (Carpenter) exhibited and made remarks on (1) a reputed British specimen of *Argynnis dia*; (2) a melanic variety of *Callimorpha dominula*; (3) winged ants as the food of gulls in Cornwall; (4) *Planema epaea* from S. Sudan and Budongo Forest, Uganda, with other Acraeines from the latter locality; (5) *Acraea doubledayi* from S. Sudan; and (6) further evidence of aggregations for sleep in aposematic butterflies. Mr. E. B. Ashby exhibited a rare moth from Finland. Mr. H. St. J. K. Donisthorpe exhibited a rare beetle, *Denops albofasciatus*, new to Britain. Prof. E. B. Poulton, F.R.S., exhibited larvae of a Geometrid Moth collected by him at the North Cape. Dr. K. G. Blair exhibited European specimens of the genus *Monochamus*. Mr. N. D. Riley and Mr. Hugh Main exhibited larvae of living insects. Dr. R. Malaise, a visitor, gave a description of a new type of trap for catching insects. —*Papers.*—The following papers were read: (1) Abnormal Larvae of *Amathes macilenta*, Hb., by C. N. Hawkins; (2) Relations of Ants with Insects Attacking Certain Poisonous Plants in Hawaii, by J. S. Phillips; (3) Observations on the Structure, Biology and Systematic Position of *Pantophthalmus tabaninus*, by W. H. Thorpe; (4) Studies on Ethiopian Simuliidae, *Simulium adersi*, by E. G. Gibbins; (5) Rejoinder to Papers on Protective Adaptations, by W. L. McAtee.—S. A. NEAVE, *Hon. Sec.*

THE SOUTH LONDON ENTOMOLOGICAL SOCIETY.—*August 10th, 1933.*—Mr. C. G. M. de Worms, President, in the Chair.—The President gave his experiences of collecting recently in Kent and Sussex.

Mr. Eagles exhibited larvae and Coleoptera taken at recent Field Meetings; Dr. King, larvae of *Lithosia sororcula* feeding on the green alga on beech, from the Chiltern Hills, and of *Lophopteryx cuculla* on maple; Mr. O'Farrell, the green larval form of *Eumorphia elpenor* from Alfriston, Sussex. Mr. R. Adkin exhibited *Cerostoma vitella*, and read notes on the attack of a spider on the moth; also *Argyroplote corticana*, with comments on its protective resemblance when settled. Dr. K. G. Blair showed a box of insects taken at the Benfleet Field Meeting, including Orthoptera, Odonata, Trichoptera, Coleoptera, and commented on the species obtained. Mr. S. N. A. Jacobs exhibited (1) a small collection of Pyrales from Calcutta; (2) a series of the rare British moth, *Aphomia gularis*, Zell., and read notes on its life-history; (3) *Myelois phoenicis*, Drnt., a very rare immigrant species, and read notes; (4) *M. ceratoniae*, Zell., a pest of dates, etc., like the last species, and read notes; (5) the Lepidoptera taken at the Broadwater Forest Field Meeting. Mr. C. N. Hawkins read the report of the Field Meeting held at Byfleet on July 29th.—HY. J. TURNER (*Hon. Editor of Proceedings*).

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## OBITUARY.

BERNARD SMITH HARWOOD.

A well-known entomologist passed away on October 10th, 1933, at the age of 57, in the person of Mr. B. S. Harwood, of Sudbury, Suffolk. The son of W. H. Harwood, the noted and much respected dealer and professional collector of an older generation, he inherited from early boyhood, like his brother Philip, the father's love of insects. Educated at Colchester Grammar School, he continued his father's professional connection after the latter's death, residing at Sudbury with a sister who shared his love of Nature and assisted him in his work. Though not neglecting the macro-lepidoptera, Harwood dealt especially in British micros and insects of other orders, of which he had a very extensive knowledge, and made large collections of his own. His knowledge of these orders led to his being consulted on the problems of pests in different parts of the world, and he sent many thousands of live insects away for the sake of the parasites contained in them. Soon after coming to Sudbury he became connected with the Conservative Association of that division, and his organizing ability and knowledge of election law led to active participation in the 1918 and every subsequent election, so that previously to the last one in 1931 he became Conservative Agent. It was probably the strenuous work at that time which caused the breakdown in health, through heart trouble, from which he never recovered. The writer has pleasant recollections of many excursions to the fens and heaths of Suffolk and Cambridgeshire in Harwood's company. Possessed of an accurate and unflinching memory he was always ready to impart his knowledge to others and it is much to be regretted that so great a store has passed away with him. W. S. G.

# THE ENTOMOLOGIST

VOL. LXVI.]

DECEMBER, 1933.

[No. 847

## PHLYCTENIA FULVALIS AND CRAMBUS CONTAMINELLUS IN SOUTHERN ENGLAND.

By J. C. F. FRYER, M.A., F.R.E.S.

IN August, 1932, through the kindness of Capt. C. Diver, I had the opportunity of meeting with *Phlyctenia fulvalis*, Hübn., and *Crambus contaminellus*, Hübn., in the south of England, and as little seems to be known of their life-history in Great Britain, a few observations, admittedly very incomplete, may be worth putting on record.

*Phlyctenia fulvalis*, Hübn.—A female captured during the second week in August laid a few eggs, which soon showed signs of development and began to hatch at the end of the month. It was known that on the continent of Europe the species feeds upon *Salvia pratensis*, a plant which is rare in England, and certainly did not grow in the locality in which the *fulvalis* occurred—where, moreover, no plants of the family Labiatae were noted in any number. As circumstances prevented any close attention being given to the larvae on hatching, they were provided with pieces of *Stachys sylvatica*, *Prunella vulgaris* and the garden "Catmint" (*Nepeta mussini*), and for some ten days they were left to their fate. It was then found that two or three of the young larvae had spun themselves slight webs in curled catmint leaves, while others were on the walls of the box. No feeding had taken place on any of the plants, and it was evident that the larvae were preparing to hibernate. They were given small pieces of straw, into which they crawled, and were then placed in a pot with a growing plant of catmint, covered with muslin. Absence abroad prevented any further observations, and the pot was left in a cold frame for the winter.

At the end of April signs of feeding on the catmint were seen, and it was found that three larvae had survived the winter. On May 4th the largest was 7 mm. long. In colour it was pale apple green and somewhat translucent, with the gut showing through the skin a darker green. The head and prothoracic plate were black and the legs suffused with black. As the larvae were evidently feeding very unwillingly on catmint, various other labiates, including garden sage and mint, were tried with no success. Fortunately, however, Mr. B. S. Williams, of Harpenden, had a plant of *Salvia pratensis* (from French seed) growing in his garden, and leaves of this were immediately accepted by the larvae, which then grew

rapidly, and the largest was full fed on May 27th ; it still retained its apple-green colour, and the only change noted was in the head and thoracic plate, which had turned to a yellow-brown, with a very characteristic black pattern. On the head this pattern consisted of two blackish marks on each side of the vertex, extending forward for a short distance from the hind margin, and two hook-shaped marks, passing from the hind margin of the head on each side (outside the two marks previously mentioned) and curling inwards towards the centre of the head ; in each case the marks were formed by a number of minute black dots. The pattern on the prothoracic plate consisted of an intensely black bar on each side of the middle line, reaching from the hind margin nearly, but not quite, to the anterior margin. These features on the head and prothoracic plate are mentioned in some detail, as they might be of assistance in searching for the larvae and solving the mystery of the food-plant in Great Britain.

The caterpillars when full fed spun a slight cocoon in the leaves of the food-plant, and the moths—two females and one male—emerged during the first half of July.

*Crambus contaminellus*, Hübner.—The description under this name in Buckler's *Larvae of British Butterflies and Moths* (9 : 302) refers to the larva of *C. salinellus*, and there appear to be no observations on record that can with certainty be attributed to that of *C. contaminellus*. A female *C. contaminellus* obtained in mid-August, 1932, laid a small batch of eggs, which hatched early in September, and as it was then impossible to give them much attention, they were released on a tuft of *Festuca* sp. growing in a pot : the plant was enclosed in a muslin-covered glass cylinder, and the whole left in a cold frame for the winter. No signs of any feeding were observed until April, when two small areas of the grass tuft turned brown. On May 4th it was found that a vertical silk tube had been spun between the blades of grass, and in it was a larva of some 9 mm. long, of a uniform sooty black colour. The skin was glabrous and much wrinkled, while the head was a little lighter in colour than the rest of the body. At the least disturbance the larva retreated rapidly down the tube into the centre of the tuft, and as it seemed undesirable to pull the grass to pieces, no more detailed description could be made. During May a second much smaller larva was noted in another silk tube, but it always remained more or less hidden. As the larvae grew the silk tubes were enlarged, and became funnel-shaped, with a superficial resemblance to the silk tube of a spider, except that numerous pellets of frass were ejected at the mouth of the funnel. On June 10th one larva that appeared to be fully grown was persuaded to leave its tube, and the following description made :

Length, 12 mm. Head shining brown, mouth parts darker brown; legs black. Prothoracic plate shining brown with a darker brown dot on each side near the posterior margin. The body was greyish brown in colour, tinged slightly with reddish brown with a similar coloured horny anal plate. The tubercles were shining, of a somewhat darker shade of the ground-colour, each with a dark spot from which arose a short seta. On the second thoracic segment there were two spots anteriorly, one on each side of the middle line, and a black transverse bar posteriorly, evidently caused by the fusion of two spots across the middle line. The spots on the third thoracic segment were similar, except that the two posterior spots remained distinct and separate. On the abdominal segments there were four spots, two on each side of the middle line, as on thoracic segment 3, but also two additional spots, one on each side, just in front of, and above, the spiracle, which was very dark brown in colour. The larva is thus hardly distinguishable from that of *C. salinellus*, as described by Buckler.

Of the two larvae, the larger pupated (presumably) soon after the above description was made, but the second continued to feed until well into July.

The pupa was formed in the soil in a tough silken cocoon, into which were interwoven granules of earth and sand. Of the two, one died, but a female emerged from the second on August 6th. This specimen was taken out to the area in which the species occurs with a view to "assembling", but no males appeared to be attracted, although a pairing was later obtained with a captured male.

*C. contaminellus* is a very inconspicuous species, and its habits seem to be little known. It is most difficult to find in the day, even in a locality where it is relatively numerous after dusk, and where the herbage is so scanty that it is difficult to see how any moth could be overlooked. The insect speedily becomes faded and worn, and then without a close examination might very easily be confused with one of the more common Crambids. Capt. Diver's discovery of the species in a new locality is of much interest. There appear to be no recent records of its occurrence, and most of the specimens in collections seem to have come either from Blackheath, where presumably the insect no longer occurs, or Deal. Whether the records of captures in the past in Norfolk, Suffolk, Essex and Sussex really refer to this species or to *C. salinellus* seems a little uncertain. There is nothing very characteristic about the area in which Capt. Diver discovered the insect, and so far as appearances are concerned there seems no reason why the species should not be widely distributed on light sandy land.



## MIGRATION RECORDS.

BY CAPT. T. DANNREUTHER, R.N.

THE following is an abstract of records for 1933 recently collected under the South-Eastern Union of Scientific Societies' scheme. For previous records see *Entomologist*, 66 : 186-90, 209-12, 230-4, 251-7.

(1) *Records of Insect Movement.*

(1) August 14th : *Colias croceus* and *C. hyale*, one each at Powfoot, near Arran, Dumfriesshire, seen in afternoon, flying 2 ft. above ground, following indentations of cliffs to the westward in a strong S.W. wind towards Silloth, Cumberland (H. C. S. H.).

(2) September 5th : *Pyrameis atalanta*. One alighted on S.S. "Pharos" when in mid-channel, west of Inchkeith, Firth of Forth, in dense fog, and a few minutes later flew off, making steadily to the south (E. V. B.).

(3) End of September : *Pyrameis atalanta*. Several fresh specimens flying over heather 400 ft. up at Durness, 15 miles E. of Cape Wrath (H. F. B.).

(4) October 1st : *Pyrameis atalanta*. One seen sailing with the wind in mist at the top of Lochnagar, 3700 ft., 42 miles W. of Aberdeen (G. McF.).

(5) September 10th : *Pieris rapae*. 10 a.m. At Round Island Lighthouse, Scilly Isles, in a fresh E.S.E. breeze, dozens flying south in warm sunshine. For two previous days and two days afterwards scores of *Pyrameis atalanta* and a few *P. cardui* were seen. All fine specimens, mostly moving southwards (R. Trotter).

(6) October 1st : *Pieris* sp. At East Dudgeon Light Vessel, 22 miles off Blakeney Point, Norfolk, nine white butterflies alighted and left going eastwards, chased by two very small birds (W. F. Fuller).

(7) October 10th : *Pieris* sp. At Inner Dowsing Light Vessel, 14 miles N.E. of Skegness, Lines, a solitary white butterfly was seen blown along to the N.E. by a fresh S.W. wind. No other insects were seen at this station by the observer during the past two years (H. Sandwell).

(8) July 27th-August 6th : *Colias croceus*. Whilst cruising in a yacht off the Devonshire coast "saw a great many at Dartmouth about July 27th, at Salcombe, July 28th-31st, at Fowey, a large number in the Halford River and in Falmouth Bay, August 4th-6th." Thinks a big influx occurred from sea earlier (H. W. T.).

(9) August 25th : *Colias croceus*. Ashburton district, Devon. 9.30 a.m. to 2.30 p.m. on a hot dry day with light variable winds, 30 to 40 were flying to N.W. (S. T. S.). (See *Entom.*, *supra*, October, p. 235.)

(10) September 5th and 15th : *Colias croceus*. On the 5th 5 were seen flying west, and on 15th five flying east at Bexhill in light easterly winds. Three captured (2 ♂, 1 ♀) on 5th (J. J.).

(11) September 23rd : *Colias croceus*. At Round Island Light-house, Scilly, three or four seen at 3 p.m., flying south in a N.W. wind, force 4, cloudy and showery. Temperature 59° F. (R. Trotter).

(12) October 13th-16th : *Colias croceus*. Four seen and two captured at Pevensey, 13th ; three seen and two captured 16th at Pevensey. All in good condition of both sexes, flying west against a light westerly wind in fine weather. Temperature 56° F. (J. J.).

(13) September 12th and October 1st : *Danaus plexippus*. In the 24 previously quoted records (pp. 254 and 225), the correct date for the female taken at Bude (B. J. L.) is September 12th, not 2nd (F. W. F.). With reference to the probable course followed by the September specimens, Mr. R. Corless, on behalf of the Meteorological Office, writes : "It is most unlikely that any migration could have taken place from the Canaries and Teneriffe last month (September). The N.E. trade wind was well established throughout the month, and there was no possibility of the wind recurring back so that the trajectories of air would reach England. On the other hand, in the second half of the month the winds over the North Atlantic were favourable for eastward passages from N. America, wind force varying from 4 to 6 (about 20 m.p.h.). It is, however, difficult to see how such a passage could have been effected by these insects, as there was in general one or more patches of bad weather along the route." The above remarks do not apply to the five specimens seen three miles at sea, making for the Dorset coast by Mr. Bower towards the end of July (see p. 250 *supra*), the earliest record for England, except one at Lymington, May 28th, 1896.

(14) August 24th to October 17th : *Pyrameis atalanta* and other immigrant species. Mr. A. A. W. Buckstone, of Ewell, writes that he has watched for autumnal migrations for many years and finds them almost invariably in a southerly direction. This year he recorded in Surrey *Pieris rapae*, *P. napi*, *Colias croceus*, *C. hyale*, *Pyrameis cardui*, *Vanessa io*, *V. urticae* and *Polygonia c-album* (2), a few of each migrating in a south or S.W. direction during the autumn, but made a detailed series of observations of over a hundred *Pyrameis atalanta* as follows : At Bookham. August 24th, about 12 flying W. or S.W. in N.W. wind ; 25th, about 12 flying W. or S.W. in S.S.W. wind ; September 2nd, 15 flying S.S.W. in variable breeze. At Dorking, September 5th, 9 flying S.S.W. in E. wind ;

15th, 12 flying S. in southerly winds; 22nd, 8 flying S. in cold N. wind; 26th, 19 flying S. in E. wind; 29th, 9 flying S. in light E. wind; October 12th, 6 flying S. in W. wind, after early frost; 13th, 5 flying S.S.E. in W. wind; and 17th, 1 flying S. in N.W. wind after early frost. None were captured, but they were all in good condition (per H. J. T.).

(15) At East Dudgeon Light Vessel, 22 miles N. of Blakeney Point, August 20th, two *Vanessa urticae*, flying lazily, rested and drifted on to northward in a light S.W. wind. Next day another one and a *Pyrameis atalanta* did the same (S. G. Sharman); on October 4th a male *Pieris rapae* was taken in a light S.W. wind (J. Audley).

(16) At St. Mary's Lighthouse, Scilly, during the first fortnight of October hundreds of *Pyrameis atalanta* and *P. cardui* seen about the island, but mostly left about October 16th; also scores of *Colias croceus*, fine large specimens, during the same period. All three species were going in a southerly direction (R. Trotter).

(17) July 7th, at 2 p.m., there were several hundreds of *Pieris rapae* on the Thames meadows at Shiplake, Oxon. Observer left, but on returning at 4.30 p.m. found only 50 or 60 left, males predominating (W. S.).

### (2) *First Appearances Reported.*

*Pyrameis cardui*: May 18th, one at Sulham, Berks (H. L. D.); May 18th-31st, about a dozen seen on Lancashire coast sandhills (A. P.); June 6th, one at Aldermaston, Berks (H. L. P.).

*Pyrameis atalanta*: March 18th, one at Mold, Flint (G. de C. F.); March 27th, one at Barnby Moor, Yorks (W. W.); April 7th, one at Aldermaston (H. L. P.).

*Acherontia atropos*: In May, a single specimen taken at Doncaster (G. E. H.); June 15th, one taken at Blubberhouses, Yorks, late evening (G. D.). In June, one at Paisley (A. M. S.); September 6th, a male taken at Barnard Castle (J. P. R.), and others elsewhere.

*Herse convolvuli*: August 27th, Lizard district (F. P.); September 6th, Glencoe, Argyllshire (A. F. B. P.); September 8th, Dalkeith (J. A.); in September, female at Barnard Castle (J. P. R.); October 11th, one taken in the Outer Hebrides (A. O.).

*Celerio livornica*: June 1st, Start Lighthouse, 2 a.m. (A. W. G.); August, Hull (T. S.); August 22nd, Newton Abbott (S. T. S.); September 6th, one taken in Lizard district (F. P.).

*Macroglossum stellatarum*: May 15th, at 3 p.m. after some foggy days (temperature 61° F.), dozens were seen at Round Island Lighthouse, Scilly, and a specimen sent in (R. Trotter); June 7th,

Canty Bay, N. Berwick (C. E. E.); July 4th, three at Knaresdale (G. B.); July 20th, Aldermaston, Berks (H. L. P.), and others.

*Heliothis peltigera*: June 16th, the first taken at Haslemere (R. O. B.); July 27th, three at Mawgan Porth, N. Cornwall (P. S. S.).

*Plusia gamma*: Surrey, after an absence of larvae and pupae, a solitary worn specimen seen May 15th, then none until June 7th, when they suddenly became abundant at Epsom, and plentiful at Horsley: then after a cold spell they all disappeared, but in summer 37 counted (A. A. W. B.); May 22nd, six at Slough (G. A. B.); July 14th, forty at Woodley, Berks (H. L. D.); and others.

*Bupalus piniaria*: May-June 16th at Haslemere, extremely plentiful, but no females (R. O. B.).

*Nomophila noctuella*: July 25th, Sulham, Berks, about 20 (H. L. D.); September 2nd-23rd, Exmouth district abundant (H. W. W.).

*Leucania l-album*: September 6th at the Lizard, one (F. P.).

*Leucania vitellina*: August 25th-September 8th, twenty taken at the Lizard August 25th, and twenty or more a fortnight later; and as many again reported at Newquay, Cornwall, then (F. P.).

*Caradrina exigua*: August 30th at the Lizard, one (F. P.).

*Catocala fraxini*: One damaged ♂ specimen taken September 19th at Reigate (A. E. T.), see *Entomologist*, *supra*, p. 244.

### (3) *Abnormal Abundances Reported.*

*Pieris rapae*: At Sandhurst, Kent. September. Never before so many in my experience (G. V. B.).

*Pyrausta cardui*. Cumberland. More frequent in 1933 than I have known it for forty years (F. H. D.).

*Vanessa io*. Abergavenny. August 13th, about 300. Never seen so many before in Monmouthshire (J. B. G. T.).

*Macroglossum stellatarum*: Carlisle district. Not seen for several years, but quite a number noted since end of August (F. H. D.).

*Pieris rapae*: In July, at Pwllhel, N. Wales, reported to recorder: "White butterflies present in clouds" (informant not an entomologist). The species very abundant throughout Lancashire and Cheshire from April to September (H. W. W.).

*Hippocrita jacobaeae*: On Lancashire coast between Liverpool and Southport ragwort on the sandhills defoliated by larvae, as has happened before at irregular intervals, but the imagines do not appear to extend their range inland (H. W. W.).

(4) *Abnormal Absences Reported.*

Mr. H. W. Wilson, Lancashire and Cheshire Recorder, writes : "I have not seen a single batch of cocoons of the parasitic hymenopteron (*Apanteles*) which attacks larvae of *Pieris rapae* and *P. brassicae*," and asks whether there has been a general scarcity of the parasite, having regard to the direct bearing on the numbers of these two species which such a scarcity would be expected to have.

*Plusia gamma* : In South Devon, September 2nd to 23rd, only one worn imago seen, and one larva parasitized by a Tachinid (H. W. W.). In Bucks. absent from Gerrards Cross (P. A. B.).

"The season has been quite good for butterflies at Oxford, though the worst I have ever known for Coleoptera. I have not seen a single *Plusia gamma*, which usually comes freely to light" (J. J. W.). *Plusia gamma* at Ashburton, Devon, was scarce in the spring, maximum 8 in one evening in October, and on 11th I saw one emerging. At end of October they were feeding on ivy bloom (S. T. S.). *Plusia gamma* scarce at Ewell, Surrey; only 37 seen up to October 17th (A. A. W. B.).

Generally speaking reports show that although *Pyrameis atalanta* was more abundant than usual everywhere in the autumn, both *Vanessa io* and *V. urticae* were unusually scarce in some places and abnormally abundant in many others. Both the *Vanessas* hibernated early in August, though occasionally appearing on sunny days later. In some places *P. atalanta* was the commonest butterfly of the year, and *P. cardui* was generally much scarcer in comparison with it when in association (T. D.).

(5) *Other Records of Insects at Sea.*

At Royal Sovereign Light Vessel, off Eastbourne, on October 5th, at 4.30 p.m., B.S.T., as a fog cleared one *Phlogophora meticulosa* was taken in good condition (F. J. Morgan) (*supra*, p. 234); another September 3rd.

At Outer Dowsing Light Vessel, 30 miles east of the Humber, August 20th, at 9.15 a.m. in a west wind, force 3, one *Pararge megera* taken flying east in good condition (J. W. R. R.).

At St. Nicholas Light Vessel, a mile off Gorleston, a large moth was reported, but not identified.

At the Cockle Light Vessel, 2 miles off Great Yarmouth, the Senior Master, who has served there for six years, states that he has only observed an occasional butterfly during the summer months that has been blown off the land with strong westerly winds (F. J. Grimway).

## (6) Notes.

No records are in hand for *Celerio galii* (except larvae), *Hippotion celerio*, *Daphnis nerii*, *Hyloicus ligustri*, *Hyloicus pinastri*, or for the rarer butterflies, *Pieris daphnide*, *Argynnis lathonia*, *Lampides boeticus* and *Pyrameis virginicensis*.

Some difficulty is experienced when reports of abundance and scarcity are given in terms of local average experience which differ considerably with the district, and it is specially desirable in the case of resident species liable to reinforcement that it should be stated what is considered to be normal in each. It is suggested that the numerical scale used in France (see *Trans. Entom. Soc. South of England*, 1929, p. 41) be indicated by using the following initials to indicate that the scale is implied, as follows :

V.C. (very common) means that the species was seen "by hundreds" by a single observer within a radius of seven miles of the place indicated as his estimate of the maximum number in the area on a specified date. When seen in swarms it is better to estimate the number per acre or passing across a 70-yard front per hour, and give the three dimensions of the swarm from cumulative evidence. In all cases numbers are preferred when completing record cards.

C. (common), under like circumstances, means seen "by tens" or dozens

F.C. (fairly common) means "more than ten seen".

F.R. (fairly rare) means "less than ten" in the French scale, but is generally better expressed in actual numbers seen on a date or during the season (specifying which is meant).

R. (rare) means that "a few specimens are seen each year".

V.R. (very rare) means that "a few specimens are found, but not in every year".

N/ (or Ab.) means the species in any form has been apparently absent from the district for the period stated

When abnormal maximum figures are given it is also desirable to give the subsequent date when numbers became normal, especially when watching a migration, to estimate how it dwindles in numbers and how and where it comes to an end. Dates when last seen on the wing are also useful, and places where immigrant species dally late in the season should be watched to ascertain their winter habits. e. g. Mr. F. W. Frohawk is watching (November 12th) some pupae of *Pyrameis cardui* obtained from eggs found in mid-September in Surrey. *Colias croceus* and *P. atalanta* were reported still active on November 7th in Devon and Sussex, but in small numbers only.

As an example of the use made of such a scale, the table below indicates how the system is applied to reports from recorders as received from widely separated districts, viz. Southampton and

Carlisle. It shows what is considered to be the average locally in contrast with this season's experience for a few species. It is hoped that annual reports will contain information for all the species under observation capable of being tabulated in this fashion for the use of the Insect Immigration Committee.

TABLE OF COMPARATIVE SEASONAL ABUNDANCE.

At Southampton.		Species.	At Carlisle	
In 1933.	Normal.		In 1933.	Normal
F.C.	V.R.	<i>A. atropos</i>	F.R.	V.R.
V.R.	R.	<i>H. convolvuli</i>	F.R.	V.R.
C.	F.C.	<i>M. stellatarum</i>	F.C.	V.R.
C.	C.	<i>P. gamma</i>	F.C.	F.C.
At Hastings.				
In 1933.	Normal.		In 1933.	Normal
F.C.	C.	<i>P. brassicae</i>	C	F.C.
V.C.	V.C.	<i>P. rapae</i>	V.C.	V.C.
F.C.	C.	<i>P. napi</i>	C	C.
C.	V.C.	<i>V. urticae</i>	F.C.	F.C.

THANAOS TAGES DOUBLE BROODED.—During the month of August last, I came across several individuals of this species in four localities in Surrey, capturing fourteen in all—A. A. W. BUCKSTONE; 42, Pams Way, Ewell, Surrey.

VANESSA IO, PROBABLE SECOND BROOD.—On August 28th last I took about six dozen larvae of this butterfly at West Ewell. They were in their final instar, and commenced to spin up on the day following the date of capture and all had pupated by September 3rd, the emergence of the butterflies taking place from September 12th to 20th. All these butterflies are smaller and darker than typical *io*, thirty-five being deformed, and, with the exception of four, they have an extra blue spot on the hind wings—*ab cyanosticta*. In view of the fact that imagines of the normal emergence were on the wing in this neighbourhood in early July and that the individuals of this September emergence are undersized, I think one may assume that the latter are members of a second brood—A. A. W. BUCKSTONE; 42, Pams Way, Ewell, Surrey.

PARARGE MEGERA, THIRD BROOD.—A third brood of this species made its appearance in the Dorking district of Surrey on September 15th last, and by the 22nd of the month the butterflies were quite common. They continued plentiful until October 19th, by which date, however, they were in poor condition. Single individuals were observed in other Surrey localities. According to my field records there was a partial third brood of *P. megera* in the years 1895, 1911 and 1921—A. A. W. BUCKSTONE; 42, Pams Way, Ewell, Surrey.

## HOLARCTIC BUTTERFLIES: MISCELLANEOUS NOTES ON NOMENCLATURE.

BY FRANCIS HEMMING, C.B.E.

I GIVE below notes on a number of points regarding the nomenclature of holarctic butterflies. Three of these relate to generic and the rest to specific or subspecific names.

## SATYRIDÆ.

1. **Hipparchia natasha** **nom. nov.** pro *Satyrus alcyone* Schiff. var. *maroccana* Oberthur (1920, *Ét. Léop. comp.*, **17 Planches** : 48), which is invalid as it is a homonym of *Satyrus miszecki* H.-S. var. *maroccana* (Meade Waldo MS.) Elwes (1906, *Trans. Ent. Soc. Lond.*, **1905** : 375). I have examined Oberthur's series of his *maroccana* and, as I do not consider that they are co-specific with *Hipparchia alcyone* Schiff., in renaming this insect I have treated it as a distinct species.

2. **Maniola pulchra sylvia** **nom. nov.** pro *Maniola pulchra chatralica* Tytler (1926, *J. Bombay Nat. Hist. Soc.*, **31** : 257), which is invalid as it is a homonym of *Maniola davenporti chatralica* Evans (1923, *J. Bombay Nat. Hist. Soc.*, **29** : 781).

3. **Coenonympha semenovi leanotchka** **nom. nov.** pro *Coenonympha semenovi* Alph. var. *obscura* Alph. (1897, in Romanoff, *Mém. Léop.*, **9** : 111), which is invalid as it is a homonym of *Coenonympha leander* Esp. var. *obscura* Heyne (1894, in Rühl, *Pal. Gross-schmett.*, **1** : 610).

4. **Pararge megera fania** **nom. nov.** pro *Hipparchia megera* [recte *megera*] Linn. var. *australis* Zeller (1847, *Isis* (Oken), **1847** : 140), which is invalid as it is a homonym of *Hipparchia statilinus* Hufn. var. *australis* Zeller (1847, *Isis* (Oken), **1847** : 133).

## NYMPHALIDÆ.

5. **Argynnis aphirape caelestis** **nom. nov.** pro *Brenthis aphirape alicola* Barnes and McDunnough (1913, *Contrib. Lep. N. Amer.*, **2** (3) : 98), which is invalid, being a secondary homonym of *Argynnis angarensis alicola* Sushkin and Tsetvenkov (1907, *Hor. Soc. ent. ross.*, **38** : 18). The name proposed above is necessary equally whether *aphirape* Hb. is referable to *Argynnis* Fab. or to *Brenthis* Hb., as *angarensis* Ersch. is certainly referable to whatever genus *aphirape* Hb. is assigned.

6. **Argynnis haberhaueri** **nom. nov.** pro *Argynnis hegemon* Staudinger (1881, *Ent. Z. Stettin*, **42** : 292), which is invalid as it is a homonym of *Argynnis hegemon* Godart (1819, *Ency. Méth.*, **9** (1) (Ins.) : 258). I have named this insect after Haberhauer, by



whom it was discovered in the Ala-Tau. The oldest valid name for any subspecies of this species is that named *Argynnis hegemone* var. *erubescens* by Staudinger (1901, *Cat. Lep. ed.* 3 : 35), which, therefore, becomes the specific name for the collective species. The described subspecies of *A. erubescens* Stgr. are thus ssp. *tien-schanica* Wagner (1913), *chotana* Bang-Haas (1915) and *haberhauseri* Hemming (1933) (= *hegemone* Stgr., 1881).

7. *Argynnis ammiralis* nom. nov. pro *Papilio bellona* Fabricius (1775, *Syst. Ent.* : 517), which is invalid because it is a homonym of *Papilio bellona* Cram. (1775, *Utl. Kapellen*, 1 (2) : 20). The two names were published in the same year, and Cramer's takes precedence over that of Fabricius, as he not only described his *bellona* more fully than did Fabricius his, but also figured it. The species should in future be known as *Argynnis* (or *Brenthis*) *toddi* Holland (1928, *Ann. Carnegie Mus.*, 19 : 45), of which *ammiralis* Hemming (= *bellona* Fab.) becomes a subspecies.

8. *Argynnis thore brenda* nom. nov. pro *Argynnis thore meridionalis* Kardakoff (1928, *Ent. Mitt.*, 17 : 270), which is invalid as it is a homonym of *Argynnis niobe* Linn. var. *meridionalis* Schawerda (1916, *Verh. zool.-bot. Ges. Wien*, 66 : 232).

9. *Argynnis rossicus* nom. nov. pro *Papilio amathusia* Esper ([1784], *Die Schmett.*, 1 (Bd. 2), Forts. Tagschmett. : 170), which is invalid as it is a homonym of *Papilio amathusia* Cram. (1777, *Utl. Kapellen*, 2 (15) : 124). The oldest valid name for any subspecies of this species is *Papilio titania* Esp. (1793, *Die Schmett.*, **Supp. Band**, 1 Abschn. Tagschmett. : 58), which, therefore, becomes the specific name. No doubt Esper's specimens came from Piedmont, as he gave their locality as "Sardinien", i. e. the Kingdom of Sardinia, the title by which, in Esper's day, the Princes of Piedmont were known.

10. *Argynnis ethne* nom. nov. pro *Argynnis cypris* Edwards (1886, *Canad. Ent.*, 18 : 62), which is invalid as it is a homonym of *Argynnis cypris* Meigen (1828, *Syst. Besch. Europ. Schmett.* 1 (2) : 59). *Argynnis ethne* is a subspecies of *Argynnis aphrodite* Fab., 1787.

11. *Melitaea cinxia eupompe* nom. nov. pro *Melitaea cinxia* Linn. var. *algorica* Oberthur (1915, *Ét. Léop. comp.*, 10 : 427), which is invalid as it is a homonym of *Melitaea aetherie* Hb. var. *algorica* (Stgr. MS.) Heyne (1893, in Rühl, *Pal. Grossschmett.*, 1 : 389).

#### LYCAENIDAE.

12. *Cosmolyce* Toxopeus, 1927, *Tijdschr. Ent.* 70 : 268 *nota*.

When my recent paper (1933, *Entomologist*, 66 : 224) was written, I had been unable to trace a valid generic name for *Papilio*

*boeticus* Linn., 1767, and I had intended to propose for that species the generic name *Lampidella*. It was only when the article was in page proof that I discovered the name *Cosmolyce* Tox., which I accordingly brought forward in place of my MS. name *Lampidella*. Unfortunately, through some oversight, that name was not deleted from the last line of the note, as printed, in regard to *Cosmolyce* Tox. I therefore take this opportunity of sinking my MS. name *Lampidella* as a synonym of *Cosmolyce* Tox.

13. **Agriades zullichii** nom. nov. pro *Lycaena nevadensis* Zulich (1928, *Z. osterr. Ent. Ver.*, **13** : 73), which is invalid as it is a homonym of *Lycaena argus* Linn. [recte Linn., Oberth. nec. Linn.] var. *nevadensis* Oberthur (1910, *Ét. Léop. comp.*, **4** : 191).

14. **Aricia chiron nitschei** nom. nov. pro *Lycaena eumedon* Esp. var. *alticola* Nitsche (1926, *Verh. zool.-bot. Ges. Wien*, **74/75** : (18)), which is invalid, as it is a homonym of *Lycaena coelestina* Ev. var. *alticola* Christoph (1893, *Deuts. ent. Z. Iris*, **6** : 86). The correct specific name of the insect named above is *Aricia chiron* (Rott., 1775), which has priority over *Papilio eumedon* Esp. [1780].

#### 15. **Lysandra** gen. nov.

*Generic characters.*—I select as the generic characters of *Lysandra* Hem. the characters given by myself for *Uranops* (Hemming, 1929, *Ann. Mag. Nat. Hist.*, (10) **3** : 243).

*Type.* *Lysandra coridon* Poda (= *Papilio coridon* Poda, 1761).

This name is proposed because I find that the name *Uranops* Hem. is invalid, being preoccupied by *Uranops* Fitzinger (1843, *Syst. Rept.* : 25).

16. *Iolana iolas debilitata* Schultz.

*Lycaena iolas* Ochs. var. *debilitata* Schultz, 1905, *Ent. Z.* **19** : 18, "Algier".

*Lycaena iolas* Ochs. var. *powelli* Oberthur, 1911, *Bull. Soc. ent. France*, **1911** (13) : 268, "Algérie, Geryville, dans le sud de la province d'Oran".

Since the publication of my revision of the genus *Iolana* Bethune-Baker (Hemming, 1931, *Trans. Ent. Soc. Lond.*, **79** : 323-333), I have found that the Algerian subspecies of *I. iolas* (Ochs. 1816) was named *debilitata* by Schultz in 1905, *i. e.* six years before the publication of Oberthur's name *powelli*. This subspecies should, therefore, in future be called *Iolana iolas debilitata* (Schultz). The diagnosis given by Schultz is very brief, but it is sufficient to recognize this insect, as it draws attention to the character by which this subspecies may most readily be distinguished. It reads as follows: "*Minor, punctis nigris al. post. subtus minutis vel evanescentibus.*"

17. *Lycaena sarthus ophion* nom. nov. pro *Chrysophanus sarthus* Stgr. var. *caudatus* Stgr. (1901, *Cat. Lep.*, ed. 3 : 75), which is invalid as it is a homonym of *Chrysophanus thetis* Klug var. *caudatus* Stgr. (1901, *Cat. Lep.*, ed. 3 : 73).

#### PIERIDAE.

18. *Pontia callidice amaryllis* nom. nov. pro *Pieris callidice* Esp. var. *orientalis* Alphéraky (1881, *Hor. Soc. ent. ross.*, 16 : 359), which is invalid as it is a homonym of *Pieris rapae* Linn. var. *orientalis* Oberthur (1880, *Ét. Ent.*, 5 : 13).

19. *Euchloe cardamines hellas* nom. nov. pro *Euchloe cardamines* Linn., race *graeca* Verity (1911, *Rhop. Pal.* : 341), which is invalid as it is a homonym of *Euchloe belia* Cram. [recte Linn., Stoll nec Linn.] race *graeca* (Stgr. MS.) Verity (1908, *Rhop. Pal.* : 175).

20. *Euchloe cardamines alexandra* nom. nov. pro *Anthocaris cardamines* Linn. form *orientalis* Röber (1907, in Seitz, *Gross-schmett. Erde*, 1 : 54), which is invalid as it is a homonym of *Anthocaris belemia* Hb. var. *orientalis* Bremer (1864, *Mém. Acad. Imp. Sci. St. Pétersb.* (7) 8, No. 1 : 8).

21. *Colias erate tania* nom. nov. pro *Colias erate* Esp. race *gigantea* Verity (1911, *Rhop. Pal.* : 347), which is invalid as it is a homonym of *Colias gigantea* Strecker (1900, *Lep. Rhop. Het. Suppl.* 3 : 19).

22. *Colias chrysotheme audre* nom. nov. pro *Colias chrysotheme* Esp. var. *sibirica* Gr.-Gr. (1893, *Hor. Soc. ent. ross.*, 27 : 380), which is invalid as it is a homonym of *Colias sibirica* Lederer (1852, *Verh. zool.-bot. Ver. Wien*, 2. 18, 32). Lederer's *Colias sibirica* is a synonym of *Colias heos* (Herbst) (1792, in Jablonsky, *Nat. Ins.* (Schmett.) 5 : 213, pl. 114, fig. 5, 6 ♂). This species is usually known by the name *Papilio aurora* Esper ([1784], *Die Schmett.*, 1 (Bd. 2), Forts. Tagschmett. : 161, pl. 83, fig. 3 ♂), but that name is invalid as it is a homonym of *Papilio aurora* Cram (1780, *Uril. Kapellen*, 4 (25) : 18).

23. *Colias tyche ludmilla* nom. nov. pro *Colias melinos* Ev. race *chryseis* Verity (1911, *Rhop. Pal.* : 354, pl. 70, fig. 33 ♂, 34 ♀), which is invalid as it is a homonym of *Colias erate* Esp. form *chryseis* Röber (1907, in Seitz, *Gross-schmett. Erde*, 1 : 66). Subspecies *ludmilla* Hemming of *tyche* Böber, 1812 (= *melinos* Ev., 1847) is nearest to subspecies *deckerti* Verity, 1908, but is yellowish in both sexes. Verity's types, which are in the British Museum, are labelled "Amur". They are from the Crowley collection, the data of the specimens of which are not good; and the accuracy of the locality "Amur" for *ludmilla* is doubtful.

## PAPILIONIDAE.

24. ***Papilio machaon sylvina* nom. nov.** pro *Papilio machaon sylvia* Esaki and Kano (1930, *Zephyrus*, 2 : 201), which is invalid, being a homonym of *Papilio sylvia* Fabricius (1775, *Syst. Ent.* : 470).

25. *Thoas* Swainson, 1833, *Zool. Illust.* (2) 3, pl. 121.

Type = *Papilio thoas* Linn., 1771.

In an earlier paper (1933, *Entomologist*, 66 : 225) I noted that as Swainson had included in his genus *Thoas* a species named *thoas*, that species is automatically the type in accordance with the provisions of Article 30 I (d) of the International Code of Zoological Nomenclature. Swainson called the species *thoas* Auct., and I then made the mistake (which I now correct) of supposing that he intended by this to refer to the "swallow-tail" that he had himself named *thoas* (*Polydorus thoas* Swains., 1833). I see now from the short diagnosis that he gave that the species that he intended to refer to was *Papilio thoas* Linn., 1771.

## HESPERIDAE.

26. ***Achalarus nepos phyllis* nom. nov.** pro *Achalarus nepos* var. *frater* Alphéraky (1897, in Romanoff, *Mém. Lép.*, 9 : 115). Alphéraky's name *frater* is not available, as it is a secondary homonym of another species of *Achalarus*, viz that described as *Eudamus frater* by Oberthur in 1891 (*Ét. Ent.*, 15 : 18, pl. 1, fig. 3). The latter is a good species and not, as is commonly stated, a synonym of *Achalarus proximus* (Leech, 1891). The four ♂♂ which formed the types of Alphéraky's *frater* were taken by Potanine in 1893 near Batang in the Thibetan province of Kham. Alphéraky's diagnosis reads, "*var. subtus obscurius virescente-grisea, praecipue alae posticae*".

— — —

DANAUS PLEXIPPUS AT HASTINGS.—On Tuesday, October 2nd, I saw in my garden on the side of the West Hill, Hastings, a fine specimen of the Milkweed butterfly. From the size and general appearance I imagine it to be a female. I was able to inspect it closely for several minutes and have no doubt of the species, as it exactly corresponds with the illustration in South's *Butterflies of the British Isles*—A. M. ELLIOTT; 8, Cambridge Road, Hastings.

PAPILIO MACHAON IN EAST KENT.—Whilst collecting at Birchington last Sunday, *P. machaon* passed within ten yards of me going fast down wind. There was a strong easterly wind (at times almost gale force) blowing at the time. I thought you might like to have this record for the magazine.—F. A. LABOUCHERE (Col.); 15, Draycott Avenue, Chelsea, August 15th, 1933.

## A NEW HISPINE BEETLE INJURIOUS TO COCONUT.

BY S. MAULIK.

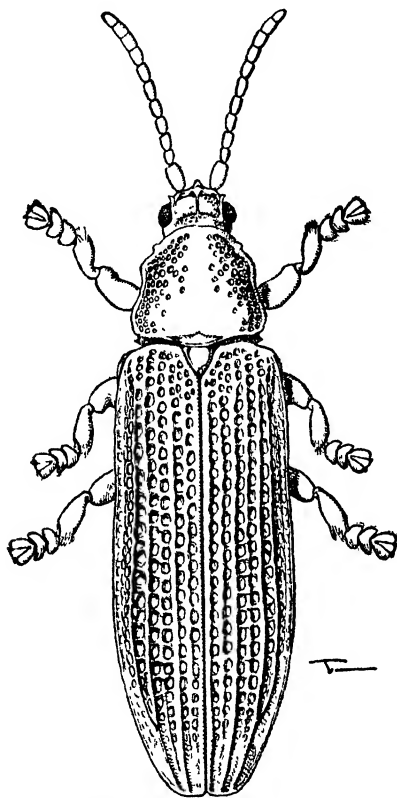
THE following description is drawn up from two examples submitted to me by Monsieur P. Vayssi re, of the Zoological Laboratory of the Institut Agronomique, 16 rue Claude Bernard, Paris. The insect belongs to the genus *Plesispa* Chapuis, *Gen. Col.*, 1875, 2: 290.

*Plesispa cocotis* sp. nov.

Body elongate, parallel-sided, upper surface flat. General colour black, with the legs, some of the mouth parts and small ill-defined areas on the pronotum and the basal margin of elytra red-brown.

*Head* with a finely punctate collar behind the eyes; interocular space elevated into a well-defined area which is broader than long, with the surface rugose having a wide and deep median channel, and a lateral channel along the elevated lateral margin; produced between the antennae into a sharp process which is not so long as in *P. reichei* Chapuis, and grooved on the upper side as *P. nipae* Maulik. The structure of the interocular elevated portion is plainer in *P. reichei* and *P. nipae*. Antennae hardly extending beyond the base of the prothorax; first segment thickest, punctate, and as long as the next two together; second shorter than third, but equally thick; third slightly shorter than fourth; fourth and fifth equal; sixth slightly shorter than fifth; from the seventh to eleventh the segments are somewhat laterally flattened: seventh somewhat larger than either sixth or eighth; all segments are punctate, but eighth to eleventh more closely so, on the upper surface of each of the last four segments is a delimited area presumably sensory; the eleventh rounded on the upper surface, straighter on the underside. In *P. reichei* and *P. nipae* the antennae are much simpler and do not have similar relative lengths of the segments; the flattening of the apical segments and the sensory areas on some of them are not usually visible, although by closer examination under high power these characters may be faintly traceable. *Prothorax* quadr te, very slightly narrowing in front; each lateral margin strongly sinuate, the edge being serrate to a certain extent; at each anterior angle is a seta-bearing pore, along the basal margin in front of the scutellum is a deep sulcation; upper surface flat and smooth in the middle from the base to the apex; on each side and in front the surface slopes down; lateral areas covered with large pits, some of which have invaded the smooth area; the median smooth area and a similar smooth area in front contain extremely fine punctures, which are sparsely distributed. In the details of structure given here the present species differs from *P. reichei* and *P. nipae*, although the form and general structure are common. *Scutellum* triangular, with the apex acute and the surface finely shagreened. *Elytra* broader at base than the prothorax; punctate-striate; each elytron with nine longitudinal rows of punctures across the base, three or four

punctures representing a scutellar row, and with ten rows across the middle, fifth and sixth, each dividing into two. On the flattened dorsal surface the punctures are not large, though deeply impressed, but on the lateral surface each of them is surrounded by a wider area with the sides sloping to the centre of the pit. On the flattened surface the interstices are plane, but on the lateral surface they are



*Plesispa cocotis* sp. nov.    × 9

elevated, being much more accentuated on the apical area. At the extreme apex the suture and two or three interstices are very sharply raised. The present species resembles *P. reicher* and *P. nipae* in having these structures, but possessing them more pronouncedly. *Underside* smooth.

*Length*, 8.5 mm.

*Breadth*, 4 mm.

NEW CALEDONIA (*J. Risbec*), 1932.

*Type* in the British Museum.

Described from two examples.

## A SMALL COLLECTION OF BRITISH TRICHOPTERA.

BY MARTIN E. MOSELY, F.R.E.S.

A SMALL collection of British Trichoptera has recently arrived at the British Museum, collected by Mr. H. L. Burrows during the past two years. The collection contained examples from Cheshire of *Limnophilus decipiens* Kol, *L. politus* McLach. and *L. nigriceps* Zett, all three species differing in some respects from examples already in the Museum Collections.

The *decipiens*, of which there is a series of seven, in several examples are wanting the dark pterostigmatic marking which is generally a conspicuous feature in this insect. The examples of *nigriceps*, four in number, are rather heavily shaded along the post-costal region, resembling in this respect *L. extricatus*. Other examples in the Museum collections have uniformly shaded wings. Of the five examples of *politus*, three are rather more strongly freckled than is usual in this species.

The complete collection is as follows :

## LIMNOPHILIDAE.

*Limnophilus flavicornis* F.—Delamere Forest, Cheshire, 11.x. 1931.

*L. decipiens* Kol.—Delamere Forest, Cheshire, 11.x. 1931.

*L. politus* McLach.—Delamere Forest, Cheshire, 11.x. 1931.

*L. nigriceps* Zett.—Delamere Forest, Cheshire, 11.x. 1931.

*Anabolia nervosa* Curt.—Delamere Forest, Cheshire, 11.x. 1931.

*Asynarchus coenosus* Curt.—Chat Moss, Lanes, 27.viii. 1932.

*Stenophylax alpestris* Kol.—Burnt Wood, Staffs, 18.vii. 1932.

*Halesus guttatipennis* McLach.—Miller's Dale, Derbyshire, 1.x. 1932.

*Drusus annulatus* Steph.—Dovedale, Derbyshire, 24.vii. 1932.

## LEPTOCERIDAE.

*Oecetis notata* Ramb.—Wye Valley, Monmouth, 5.viii. 1932.

## HYDROPSYCHIDAE.

*Hydropsyche lepida* Pict.—Wye Valley, Monmouth, 5.viii. 1932.  
British Museum  
(Natural History),  
April, 1933.

## NOTES AND OBSERVATIONS.

AGRIADES BELLARGUS : COLORATION OF FEMALES.—By the last week in May this butterfly was strongly in evidence here. As usual, following a warm, dry period prior to emergence, all the females, except for the lunules, were wholly brown. Then a sharp thunderstorm occurred with heavy rain, followed at once by a return to hot

weather. Now, immediately after this storm, blue-scaled females began to appear, and rapidly increased in numbers, going through the whole range of named varieties, up to and including the extreme form *ceronus*. After a week of these conditions, these blue females, which had become the prevailing form, decreased in numbers as rapidly as they had appeared, until towards the close of the brood they were again entirely replaced by the brown ones. It is only after a late and wet spring that we look for blue females, and even then *f. ceronus* is rare. In view of the foregoing evidence, it would appear that this thunderstorm was the direct cause of this sudden change in those pupae which were due to emerge during the above-mentioned week. An abundant second brood put in an appearance during the last week of July, and up to date of writing (August 26th), the females, except for a very occasional specimen lightly blue-scaled at the base of the wings only, have again been wholly brown. My friend, Mr. A. M. Morley, M.A., of Folkestone, was closely associated with me in these observations - E. C. JOY, F.R.E.S.; 11, The Leas, Folkestone.

**LIMENITIS SIBYLLA SECOND BROOD**—While collecting *Peronea cristana* here, I saw a freshly emerged *L. sibylla*, evidently of a second brood, this afternoon - B HAROLD SMITH; Casa, Frensham Vale, Lower Bourne, Farnham, Surrey, September 3rd, 1933

**AUGIADES SYLVANUS DOUBLE BROODED**.—During October last I saw three individuals of this species, two near Leatherhead on the 1st of the month and one near Dorking on the 13th, on which date, by the way, I captured two freshly emerged *Colias croceus*. The *A. sylvanus* were also in good condition —A A W BUCKSTONE; 42, Pams Way, Ewell, Surrey

**SECOND BROOD OF THANAOS TAGES**—On August 13th last I captured four *T. tages* belonging to a second brood, at Swanage, in the same spot where I took examples in August, 1921, which was an unusually dry and warm summer. As a rule the second-brood specimens are very distinct from the normal spring examples, being very much lighter in colour and having a more variegated appearance, while the under-surface is wholly of a pale ochreous-cream colour instead of the ochreous-brown as in the spring emergence —F. W. FROHAWK; September, 1933.

**DOUBLE BROODEDNESS OF NORMALLY SINGLE-BROODED LEPIDOPTERA IN 1933**—There can be but little doubt that the past summer has been a record one as regards normally single-brooded species producing a second brood. I have done but little collecting in Britain, but have come across the following instances:

*Pyrausta stachydalis*.—This species is usually not flying until well on in July. The larvae hibernate in a cocoon and do not change into pupae until May or June of the following year. This year an expedition with a friend to a known haunt in West Surrey resulted in the capture of one worn female only; obviously the emergence



was practically over. The captive deposited a number of ova, which hatched in a few days. The larvae fed up rapidly, and about half of them pupated and became imagines in August. The remainder of the larvae are hibernating normally.

*Hypena proboscidalis*.—Normally flies in June and July. Two examples entered my study, attracted by the light, in late September; as they were perfectly fresh, and had a wing expanse of 32 mm. only, whereas normal specimens of the June-July emergence have a wing expanse of about 40 mm., obviously they must be regarded as appertaining to a second brood.

A very remarkable emergence was that of a female example of *Endromis versicolor*. In 1931 I obtained a number of larvae in Inverness-shire. There were no emergences in 1932, but a number in March last, and the female in question was found in the breeding-cage alive during a warm spell in August.—W. G. SHELDON; November 4th, 1933.

UNUSUAL SECOND BROODS IN 1933.—The following dates may be of interest: *Argynnis selene*, August 20th; *Euplexia lucipara*, August 28th; *Drepana binaria*, August 28th; *Hypena proboscidalis* (a small specimen), August 29th; *Plusia chrysis*, August 30th; *Eupithecia satyrata*, September 8th; *Euchloris pustulata*, September 8th. The above were all taken in the Ashdown Forest district, and were quite fresh specimens. Fresh specimens of *Barathra brassicae* and *Axylia puta* were taken at sugar at Dover on September 13th. All the above appear to be second broods.—J. H. B. LOWE (Capt. R.E.); 69, Oakwood Court, Kensington, W. 14.

UNUSUAL SECOND BROODS.—I think that it is of interest to report the capture here on September 26th of *Agrotis exclamations* and *Ourapteryx sambucaria*, and on the 27th of *Euchloris pustulata* (*bajularia*)—no doubt second emergences, which I have not observed before in these species.—C. G. M. DE WORMS; Egham, September, 1933.

PLUSIA FESTUCAE, SECOND BROOD.—As this season, 1933, has been an unusually early one, marked by high temperatures, it is quite in accordance with these conditions that many species of insects which normally are single-brooded should this year show a double brood. Yesterday, September 9th, I took a perfect specimen at rest on a fence here of *Plusia festucae*; as this moth appears with us about the end of June or first week in July, an emergence in September is quite evidently a second brood. How far this has been noted with other species would be of some interest.—A. M. STEWART; 8, Ferguslie, Paisley.

COSMOLYCE BOETICUS (LAMPIDES BOETICUS) IN SAVERNAKE FOREST.—Whilst staying with my brother, Major J. W. Cardew, R.A., of 38, Earlsfield Road, Hythe, last month, he told me that he would like me to identify some curious hairstreaks he had taken

some years ago in Savernake Forest. One glance at the "hair-streaks" was sufficient for me to identify them beyond question as three rather battered male specimens of *Cosmolyce boeticus*. The history of these specimens is briefly that on or about August 22nd, 1922, my brother was entomologizing in Savernake Forest. It had been blowing hard all day and had been stormy for several days, winds from southerly points. So hard was it blowing that he resorted to beating the lee side of bushes, and from some small hollies about 3 p.m. beat the three specimens shown to me. He is of opinion that he could have taken others had he realized what he had got. The appearance of the specimens would support a "blown over" theory, but on the other hand Savernake Forest is a very long way inland.—P. A. CARDEW (Col.) ; 20, St George's Place, York.

**THECLA W-ALBUM IN SOUTH WALES**—Looking through a small private collection of butterflies and moths the other day, I came across a specimen of *Thecla w-album*. The owner of the collection was Mr. R. G. C. C. Sandeman, of Dan y Park, Crickhowell, Brecknockshire. The insect was caught by Mr. Sandeman himself on bramble blossom on the estate. Dan y Park is a large property on the banks of the River Usk and contains much woodland, and it is quite possible therefore, that this hairstreak may be plentiful if searched for next summer. It was taken in July of this year. I cannot find any record of its being found in Wales before. Mr. Sandeman was not aware of the identity of the insect.—B. TULLOCH (Brig.-General) ; Hill Court, Abergavenny, October 1st, 1933.

**POLYGNIA C-ALBUM IN CHESHIRE**—On September 3rd I took *P. c-album* in my garden in Cheadle Hulme, Cheshire. As far as I can ascertain records of this insect in Cheshire are few and far between—(Dr.) JOHN HOPE ; 2, Moseley Road, Cheadle Hulme, Cheshire.

**IMMIGRANT LEPIDOPTERA**—Mr. R. Trotter reports several *Pyrameis cardui* seen on May 16th and several *P. atalanta* on the 17th on Round Island, Scilly Isles, and I have two interesting letters from Mr. E. N. Hale, of Warmley, Glos. The first was written from Polzeath, N. Cornwall, and states that he saw *P. cardui* on Pentire Head in some numbers in June last year, and again this year on May 24th he saw one in the evening. He goes on to say : "There is a band of Welshed Thistle (*Carduus crispus*) some hundreds of yards long, running inside the stone wall, and now in flower (June 4th, 1933). The butterflies (*P. cardui*) and Humming-bird moths are there in literally scores ; also I saw one Clouded Yellow in 'mint' condition and two Red Admirals. There is also a moth, very like a Silver Y, but I thought smaller, and with the markings on the upper edges of the upper wings more distinct. I saw perhaps ten of these. I am no entomologist, but know enough to be sure of what I have written."

I suspected that the *Plusia* in question was probably only *gamma*, immigrant specimens of which, seen by me (see below), certainly

answered Mr. Hale's description, though not all smaller than *gamma*, but I asked him to get me some specimens, if possible, before he left on the 8th, as I could not get over to Polzeath. He wrote from Warmley on June 11th as follows: "I regret that I was unable to get you any specimens of the Silver Y, but this record may interest you. I went up to the point on Monday, the 5th inst., and all the three varieties had practically gone. I saw on my walk . . . perhaps a dozen *Macroglossum stellatarum* and as many *P. cardui*, half a dozen *P. atalanta*, and no Silver Y that I could identify. Much the same story on Wednesday, but there were a certain number inland. Also on Sunday [presumably the 4th, as he was leaving on the 8th] I saw coming in from seaward three or four Clouded Yellows. I was not able to identify these by close inspection. On returning here on Thursday the first butterfly I saw was a Red Admiral, and in the evening I saw a Humming-bird moth in the garden. This place is 300 ft. up, between Bristol and Bath." Mr. Hale adds that the *cardui* and *stellatarum* were mostly fresh and none were very worn, the *atalanta* also fresh. The wind was west and was therefore blowing *along* the cliff, which runs east and west, and the wall mentioned is parallel to the cliff edge.

The fact that *croceus* was "coming in from seaward" on Whit-Sunday suggests that it was coming from the north, or possibly north-west, which is curious; but a short paragraph, head "Clouded Yellows", in the *Western Morning News* of June 5th (Whit-Monday) says. "Reports from Dartmoor state there was a regular procession of these delightful butterflies during Whitsuntide. Others were seen on the north Cornwall coast. They certainly seem to be well distributed over the West." I tried to get some further information about these Clouded Yellows, but without success, except that in the *Western Morning News* of June 23rd a writer states that he saw one on the cliff at Polhawn Cove on the South Devon coast, near Plymouth. I have neither heard nor seen anything of *P. cardui* in this district, but on Whit-Sunday my wife told me there were six *atalanta* in the garden toying together in a bunch and flying upwards. They remained in the garden all day, flying about and alighting on the flowers of *Buddleia globosa* (now at its best and very sweet-scented), and frequently buzzing off in pairs with the courting flight, or something like it, one flying just above the other for a minute or two and then both flying round separately. These specimens were rather worn and chipped, as was also a single specimen seen in the garden on May 28th, which was the first seen this year. Nothing has been seen of them since Whit-Monday. *M. stellatarum* was first seen in the garden on the morning of May 22nd, flying round, but not actually visiting, some wallflowers. On June 4th I saw a specimen visiting the rhododendron flowers in a neighbouring garden, and I noticed that although it did not actually alight on the flowers, it had to go in a good way, as *Hemaris fuciformis* and *tityus* do, because the nectar is at the base of the stamens and ovary and therefore deep down, but its wings did not cease vibrating. A specimen was seen flying in the verandah on June 13th, and I have

seen an odd one or two elsewhere about that time, but none this month. Several large, grey *Plusia gamma*, looking rather faded, were also about the garden, and one *Nomophila noctuella* was seen on June 4th, but neither species has been seen since Whit-Monday.

From all the above evidence I infer that an immigration of *P. atalanta*, *P. gamma*, *M. stellatarum* and *N. noctuella* took place on or about June 4th, but this did not include *P. cardui*, which seems to have come over earlier, if the specimens seen by Mr Adkin at the Lizard on May 18th and onwards (p 162) were (most probably) *not* locally hibernated examples, as the *atalanta* he saw at the same time *may* have been. The weather during the latter half of May was mainly sunny here, but the N.E. wind prevented the temperature from rising above 70° as it did in the early days of June, 90° being registered in our verandah on the 7th at 3 p.m., and again on July 4th.

—(‘ NICHOLSON : Tresillian Cornwall, July 8th, 1933

## RECENT LITERATURE.

*Life-Histories of Indian Microlepidoptera* By T BAINBRIGGE FLETCHER, R.N., F.L.S., F.R.E.S., F.Z.S. Imperial Entomologist to the Government of India. The Imperial Council of Agricultural Research. Scientific Monographs No. 2, Calcutta, July, 1932, and No. 4, Delhi, May, 1933.

The original monograph, published more than twelve years ago, was briefly noticed in the *Entomologist*, 1921, p 152. The present work, which is in effect a supplement, is arranged in two parts. The first deals with the Alucitidae (Pterophoridae), Tortricina and Gelechiadae, and consists of 58 pages letterpress and 35 plates, of which one is coloured. The second treats with the remainder of the families—Cosmopterygidae to Neopseustidae—contains 85 pages letterpress and 77 plates, of which again one is coloured.

As is the case in the original monograph, there is a vast amount of useful information in the text, and a feature of the work are the full-page plates which, in most cases, depict highly magnified figures of the various stages of a species which are often accompanied by the food-plant, showing the manner in which the larva affects it, and an outline figure of the imago of natural size. It is evident that a great amount of care had been taken in the preparation of the original drawings, and it is to be regretted that the reproductions have a somewhat coarse appearance—perhaps a question of art rather than usefulness, for the figures suggest that, as a rule, they may be quite recognizable; the few which we have been able to compare with the moths certainly are. Another matter for regret is that these parts are unaccompanied by any sort of index; this omission can, however, easily be remedied by its publication separately, as appears to have been the case with the original monograph.

These trivial blemishes do not materially detract from the value of the work, and we are indebted to the author for giving us, in a concise form, a vast amount of useful information on the earlier stages of this interesting section of the Lepidoptera as they occur in the Indian area.

R. A.

*The Centenary History of the Entomological Society of London, 1833-1933* London: Published by the Society, 1933.

The earlier chapters of this very readable volume, in which are recounted the beginnings of the Society and the vicissitudes of its younger days, are the most entertaining. It is surprising how the vigour of its first years gave way after a while to a kind of stupor and stagnation, which, at the time, brought the Society almost to the verge of extinction, largely owing, it would seem, to the personal animosities and jealousies of some few of its leading fellows. It is fortunate for British Entomology that this malevolent spirit has at last been exorcized; some of the old records of the Society bear witness all too clearly to the manner in which personal feelings were allowed to distort sound judgment. Most fortunately for the Society, a term was eventually set to these bickerings and wranglings by the emergence of J. W. Dunning, of whom it may truthfully be said that, by his energy, guidance and generosity, culminating in the gift of the entire cost of the Charter, he did more than any other Fellow to set the Society firmly on the road to recovery, and to the ultimate prosperity which was only at last fully attained under the astute direction of the late Treasurer, W. G. Sheldon. All this, and much more, will be found ably recorded by the officers of the Society in the volume under notice; but attention must also be called to the biographies of distinguished Fellows which are included, to the complete list of Fellows, past and present, and to the stimulating introduction by the third honorary life President, Prof. Poulton, who joined the Society in the year of its jubilee.

*Transactions and Proceedings of the South London Entomological and Natural History Society, 1932-1933.*

One becomes tired of saying that this volume continues to maintain and improve upon the high standard of its predecessors, that the membership of the Society grows from strength to strength and its assets to appreciate annually; but it would be untrue if one did not. From the point of view of the average entomologist, there is little doubt but that this is the most "live" Society of all. Papers deal with such varied topics as the Ova of the Lepidoptera (A. E. TONGE); Notes on *Boarmia repandata* and *B. rhomboidaria* (H. B. WILLIAMS); Wegener's Theory (K. G. BLAIR); Plant Galls (M. NIBLETT); A Home-made Light-trap (M. and F. S. SMITH); The Life History of *Isturgia carbonaria* (E. A. COCKAYNE), and The Pupa of the same species (C. N. HAWKINS). The annual address, by T. H. L. GROSVENOR, contains some interesting remarks based upon his study of the Zygaenidae; and the reports of the meetings record a mass of observations which is beyond summary. N. D. R.

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